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THE SPHERE, SEPTEMBER 13, 1941
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THE SPHERE

Vol. CLXVI No. 2173 — WITH WHICH IS INCORPORATED THE GRAPHIC — SEPTEMBER 13 1941

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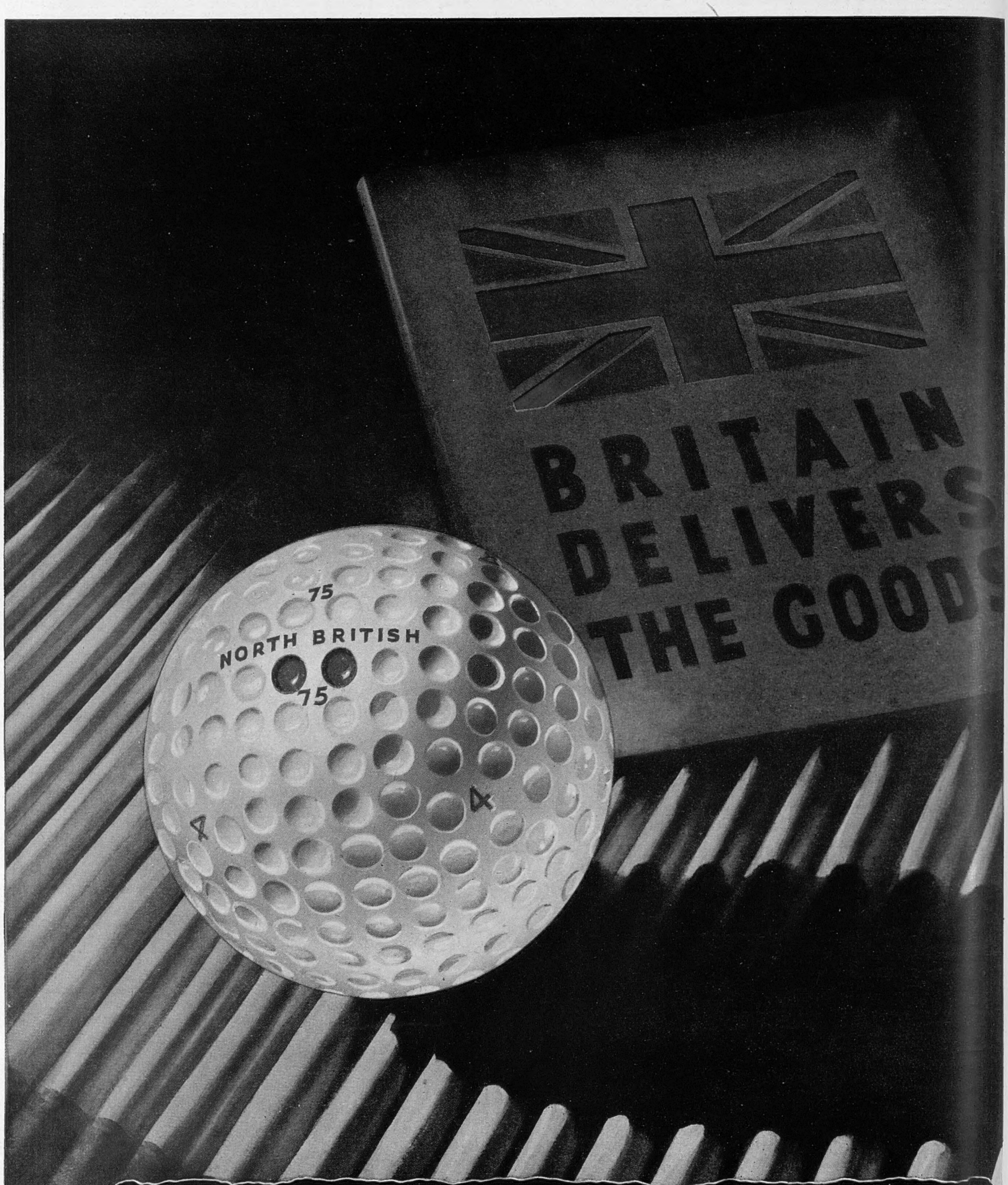

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Volume CLXVI No. 2173 The SPHERE, London, September 13, 1941

THE SPHERE
With which is incorporated "THE GRAPHIC"
The Empire's Illustrated Weekly
London, September 13, 1941

BACK FROM BERLIN: THE CREW OF A STIRLING BOMBER, ON THEIR RETURN FROM A RAID OVER THE GERMAN CAPITAL, RECEIVE THEIR CUPS OF TEA FROM A SECTION OFFICER OF THE W.A.A.F.

ON the night of September 7-8, 1940, the German *Luftwaffe* launched the first of a series of onslaughts on the heart of London, which continued with hardly a break for months on end. On the night of September 7-8, 1941, no German bombers appeared over London. *But*—British bombers appeared over Berlin! It was Berlin's fourth attack in eight nights, and the fifty-first visit of the R.A.F. to the German capital. By the great majority of English people it is hoped that Berlin will soon be experiencing non-stop attacks on an even heavier scale than that sustained by Britain last year. Amongst the aircraft now participating in the raids are the big Stirling bombers which can carry a heavy bomb load despite the long distance to be covered on the round trip. This picture was taken on the safe return home of a Stirling crew from Berlin: further pictures of this same subject are published on pp. 326-27 in this issue

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A WAR NEWSLETTER —No. 106

1, NEW OXFORD STREET, W.C.1

The Third Year and the Two Charters.—The third year of war found the nation in a curious muddle of mind concerning one aspect of our war aims. Perhaps a majority of the nation had been so influenced by Lord Vansittart's and others' views—which received enormous publicity in the summer of 1941—of the historically-proved, hereditary guilt of the German people, as to accept broadly the principle that to make an end of Hitler and his gang would be merely to scotch the Prussian snake, not kill it; that the guilt for Europe's miseries over more than half a century lies heavy on the German race as a whole; and that, vaguely, *il faut en finir*. But in practice what does that vague principle amount to? On the heels of Lord Vansittart's German philippic came across the Atlantic the President-Premier Charter, and unless I misread that admittedly broad-based declaration of war- and peace-aims, it made, officially, a nonsense of Lord Vansittart's conclusions, without contradicting his premises. That Charter laid down certain cardinal principles, some of which are relevant to the views and conclusions of Lord Vansittart: (1) However vile the German people, however bloody the guilt of the German nation as a whole, that people is not to be economically or socially starved out of existence. The Germans are to be kept on their legs—for the economic good of Europe—and presumably to be given a first chance to learn the first principles of civilised decency and Christian ethics; (2) their teeth are to be drawn. They are to be totally disarmed and the whole structure of the new (and this time permanent) security of civilisation falls to the ground unless certainly Britain and America, and presumably Russia, keep in being for many years after the war (until all the nations can achieve a permanent organisation which will afford adequate sanction by force against aggressors) a combined force of all arms utterly effective against the worst which Germany could do again during the interim period. Admit that Germany is the blond beast. Pile on the irrefutable evidence that you have but to scratch *any* German to find a Hun in any generation to the present day, what can you *do* about it? It needed no warning from Lord Vansittart for Churchill and Roosevelt to agree that Germany's teeth must be drawn *this* time, and effectively. But in the face of the Atlantic Charter's "no economic victimisation," the blond beast remains, toothless but still black of heart. If Lord Vansittart's historical arguments meant anything, they were meant as an urgent and final warning to our notoriously tolerant race. "You blind fools, don't trust the blond beast; don't hope ever to be able to live at peace and in security while *he* lives. Kill Hitler, and the Beast will find a score of new Hitlers and new hates and new ideologies. It is the nation, not the excrescences which it throws up, which must be finished with, once and for all. Against this warning is the Churchill-Roosevelt warning: "You fools: don't make the same mistake again. If you try to crush the Germans out of existence, you plant an ulcer in the body politic of civilisation, and a breeding-ground in Germany for new Hitler microbes."

Two Incompatible Policies.—Fools we often are, no doubt; blind and tolerant, easy and lazy for choice; but we are between devil and baker on this subject, and, pulled this way and that, I cling rather to the Charter than to the Philippic. To breed hate is useful in war. Our official propaganda machine knows that and ensues it. But hate tends naturally to die down after war, and a cool-headed peace will survive one boiled on a hot-plate. No doubt (*pace* Mr. Brown, etc.) Hitler, if he gains control of Britain, will emasculate all our potent males. Our Charter does not give us the same right or duty *vis-à-vis* the Germans. It is not practical politics, says the Atlantic Charter, nor Christian ethics. Lord Vansittart (and indeed all vigorous Englishmen) would scorn and spit on a compromise peace, or any sort of traffic with Hitler. But that is because a contract with a criminal-lunatic is not worth its paper value. But what if one day the German people should rise and kick out Hitler and the Nazis, set up a Stresemann and offer to hand over the criminals to justice, to return all loot and make such reparation as might be possible? Those who agree with Lord Vansittart would declare that such an offer should be rejected *in toto* while the last German soldier remained with a lethal weapon in his hand. But if, after all, there is to be no extermination, no emasculation, no victimisation of the nation of blond beasts, would not that be sheer folly? Would it not be sheer glorification of mass bombing as a noble exercise for civilised youth, and of mass torture and mass destruction as a worthy aim for sane men to pursue indefinitely? It is all very puzzling; for these two charters seem to exist cheerfully and even logically side by side. We swallow Vansittart and we accept the Charter, and appear not to observe that the two are utterly at variance. True, we have still time to make this discovery. Our propaganda and our bombs have not yet gone far towards achieving that desirable object, making the German people themselves do what allied armaments are piling up to do—kick out Hitler and his gang and hand them over to the world's justice as a preliminary to redrawing the map of civilisation on a basis of equity and security for all. But often enough it is Heaven's inexplicable miracle which decides the issue of war rather than the wisdom or endurance of man. One such inexplicable miracle—Hitler's decision to attack Russia—has already proved a turning-point in this war—and we should clear our minds in good time to exploit wisely any other miracle which may fall from Heaven.

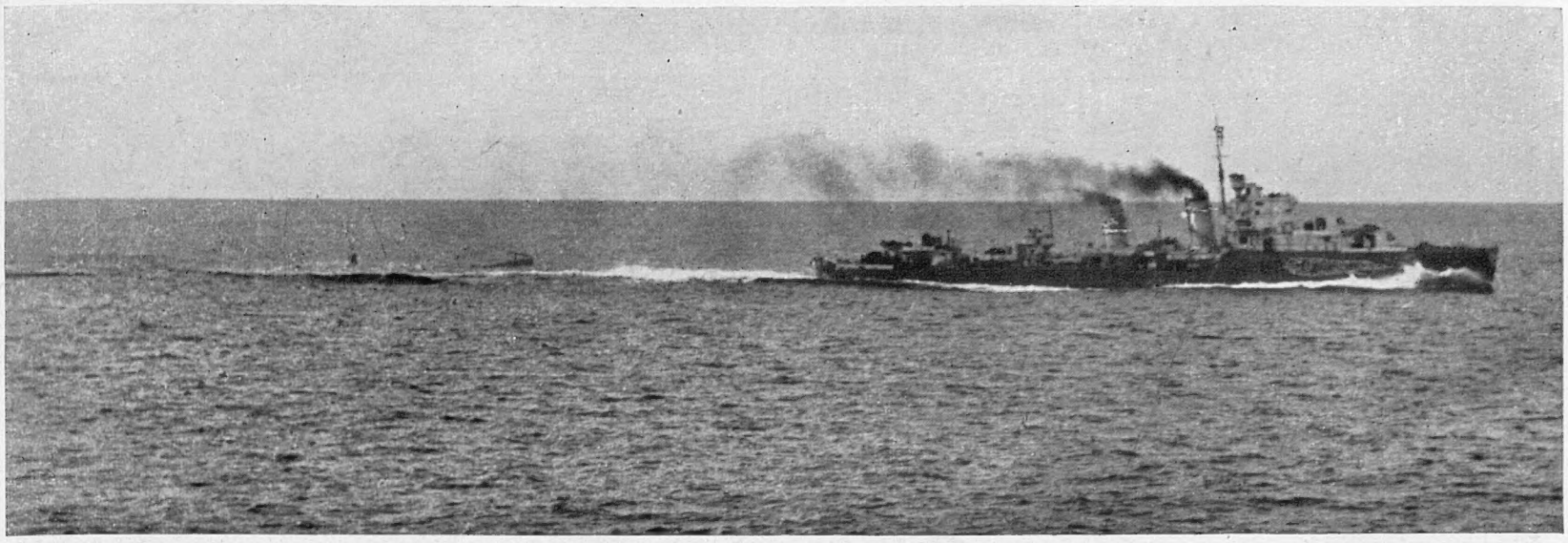
COVENTRY COMES TO LIFE AGAIN: the temporary shops which have been erected since the "Blitz"

This is a view of one of the main streets of Coventry as it appears to-day. It shows the type of temporary shops which have been erected to enable the continuance of the city's life and trade. These have been constructed of light timber in conjunction with asbestos-cement sheeting; and they have been designed back-to-back. The smaller shops cost from £200 each to build, and the larger £300

The Heart of France.—Evidence from occupied European countries comes to us "slow, how slowly," hardly more swiftly than evidence from Axis countries. I mean, of course, *reliable* evidence. Of rumours, dropped next day like hot coals, we have plenty, as in all wars; for "special correspondents" have their living to earn. Evidences from France, occupied and unoccupied, are at last available in quantity, and with cross-references and confirmations, which enable us to judge with reasonable certainty that France at heart is with us preponderatingly. I will admit that this is a pleasant surprise to me. The flow of evidence is strong and constant, and now it is confirmed from Italian and even Nazi sources. I have been slow to believe; now I am convinced. The fall of France struck me a blow from which I did not rally until August 1941. At the time of the collapse I saw the French nation as a people morally and physically broken by the shock of wars, a people ready to kiss any rod and endure any humiliation, if only the whine of shells, the rumble of bombs and the agonies of mass evacuations and scorched earth might be averted for the immediate future. I thought that they could not within five years rally enough to resist, nay, even to feel, the humiliation which must inevitably fall on them. I thought that the Nazis would be clever enough, working in such soft clay, to print their seal on France and to turn the minds of the bulk of Frenchmen in bitterness against their betrayed allies whose obstinate resistance had shown up the French collapse in colours so drab, and would prolong the terror of war and keep the bombs raining down on France until at last Hitler's triumphs must convince even Britain that further resistance was useless. It didn't work out that way. Very soon after the collapse of France, we had tackled and won the Battle of Britain. And soon after that victory, private letters and advices began to steal across which put a different complexion on French opinion. I put them aside as wishful thinking or isolated and unrelated straws. Followed our victories in Libya and against Italy. The evidences became stronger. Clearly a number of Frenchmen were beginning to feel and smart under the humiliations of Nazi and Vichy rule. After Greece and Crete, I fancied the stream of evidence slowed down. Then the stream ran stronger again, and when Russia took the strain and a fearful toll of the invincible Nazis, when Britain wrested the political initiative from Ribbentrop, and Syria, Iraq and Iran, one by one, were vigorously dealt with and purged of Nazi poisons, then the stream began to flow like a torrent, and France found her manhood once more. Frenchmen no longer saw the Nazi machine as an invincible juggernaut; the golden calf had feet of clay, clearly to be seen; the devil incarnate had ass's ears and human failings, and the glories of France could no longer be trampled in the mud without shame and without resistance. France has realised her humiliation and her last chance and hope of rehabilitation as a first-class Power. She is no longer afraid of the whine of shells and bombs; she knows the star to which she must hitch her wagon, if she shall pull it out of the mud; and (clear as print) she has remembered afresh her hatred of Germany and the living proofs of British loyalty towards her as an ally during thirty-eight years of her history—the latest and most critical in all her annals. The dam will burst one day. The waters gather to a head, and though there will be many ups and downs, I feel confidence that the stream will not flow slower. The heart of France is sound again, and France has found her manhood and will preserve it until victory. Does Darlan guess the truth? Does he realise that in French eyes to-day Germany and Vichy are one and indivisible and intolerable?

Harvest Home!—It is always a cheerful thought—that *harvest home*. The least resolute church-goer likes to stumble up the aisle among the pumpkins for harvest thanksgiving. In wartime a hundredfold is the impetus to thank God. For before the war it was but a token ceremony. The vital harvest came from the sea in little ships. This autumn we have gathered for serious eating. Without our home harvest, we should tighten our belts with a vengeance. It was nip and tuck! Only just in time the serene autumn days came and made possible moonlight harvesting. Some of the corn was sprouting, a serious percentage of the seed was left scattered over the fields for pigeons and pheasants and any fortunately placed poultry to enjoy; but the greatest British harvest in memory is in the main well and safely gathered in, and we can thank God for that on our knees. Our faith was tried; over 5 in. of rain fell in August. Our faith was justified. Heaven smiled again in the nick of time; and even the six-year-old children learned something of the art of stooking, and the elders of the art of pitching. (Perhaps there will for a few weeks be something over for the hens. Mine have not laid a single egg for twenty-eight days; they have been dying of starvation in the weakness that follows moulting.) Anyway, we have been able to relieve the little ships to an extent never before attained in living memory, and this island to-day is as full of vital grain as at any time before, in peace or war.

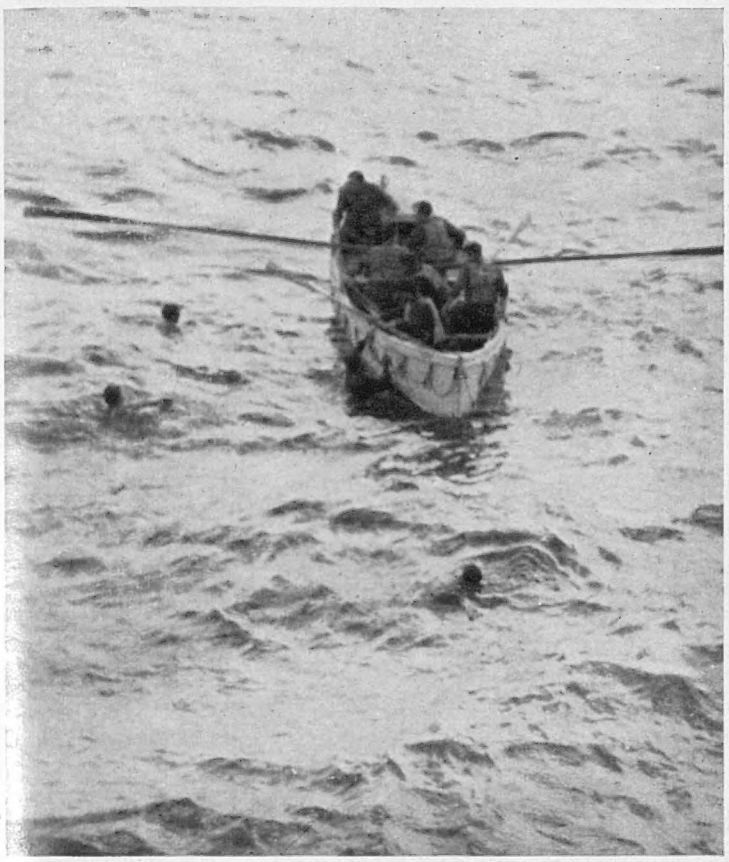
THE OLD STAGER



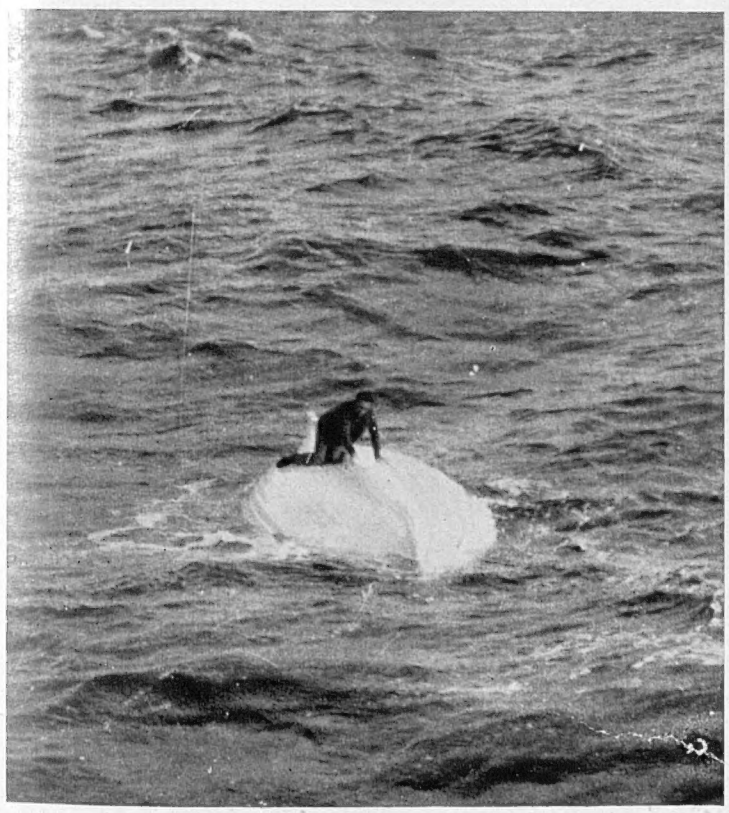
A BRITISH DESTROYER RAMS AN ENEMY SUBMARINE: After the impact—all that can be seen of the U-boat is the bow and the conning-tower; the stern has already gone down

After an enemy U-boat had been forced to the surface by depth-charges during recent operations, the British destroyer which had located her finished the job off completely in true naval style by going right in at full speed and ramming the submarine, cutting her in two. Contrary to the practice of the Nazis, boats were at once lowered to pick up the crew of the submarine. A similar feat by the cruiser *Hermione* has also been reported by the Admiralty. This British war vessel has also rammed and sunk an Italian submarine, but on this occasion there were no survivors

THE ROYAL NAVY AT WORK



THE BRITISH DESTROYER PICKS UP THE SURVIVORS: After the ramming of the U-boat one of the destroyer's boats rescues the enemy crew



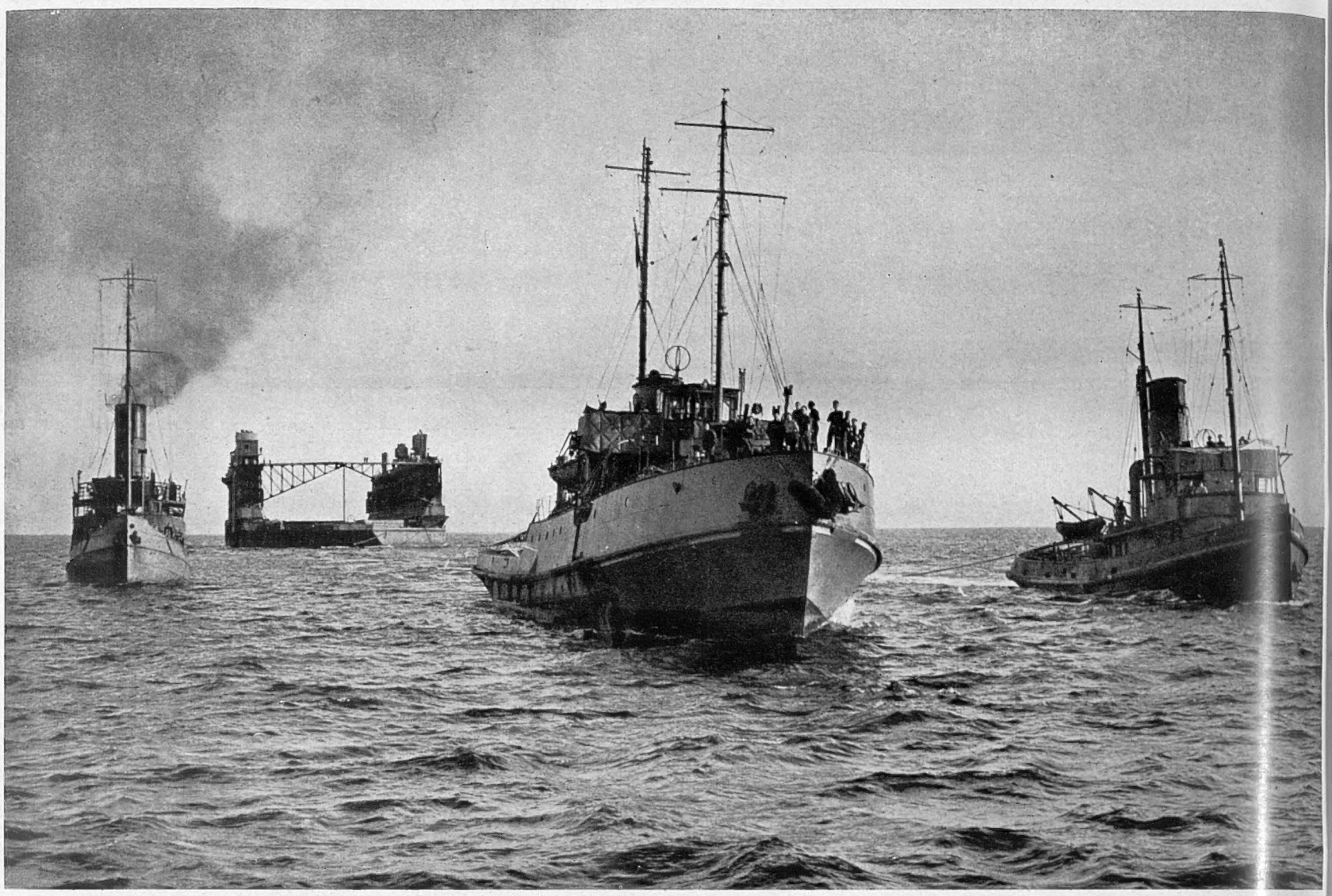
CLINGING TO AN UPTURNED BOAT after his ship had gone down in the Atlantic

The three pictures reproduced here depict phases of the Battle of the Atlantic, which still goes on—and will continue to go on until the end of the war. Each picture shows the result of a torpedo or bomb attack on British merchant vessels, and how seamen from those vessels were rescued in the nick of time by destroyers of the Royal Navy

A MID-ATLANTIC DRAMA: Survivors from a torpedoed ship as they were found on rafts and rescued by a British warship

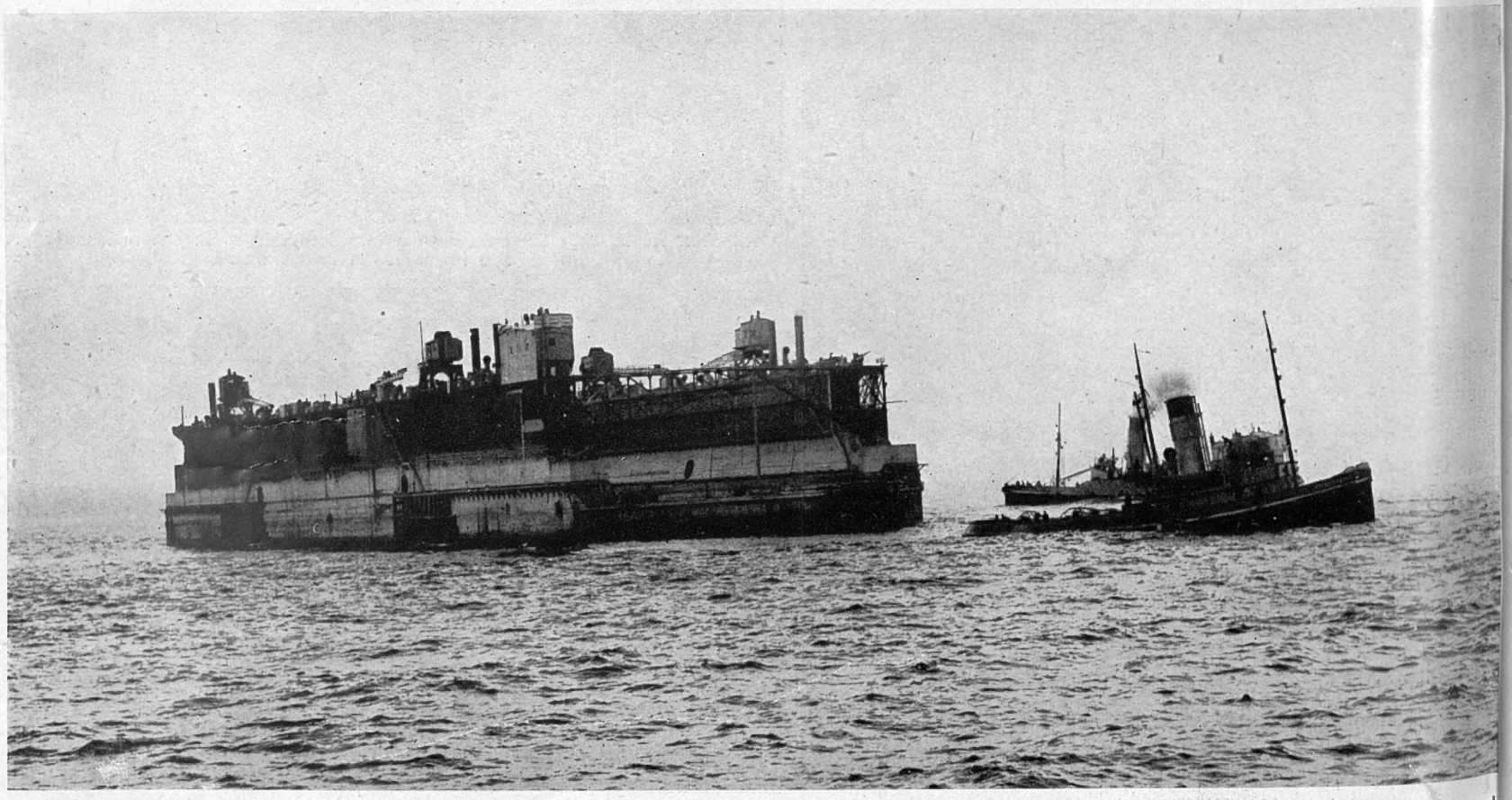
ANOTHER DRAMA OF THE ATLANTIC: A whaleboat carries a full load of ship's officers (who remained on their vessel to the last) and exhausted members of the crew plucked out of the water after their ship had been bombed

A DARING NAVAL ACHIEVEMENT



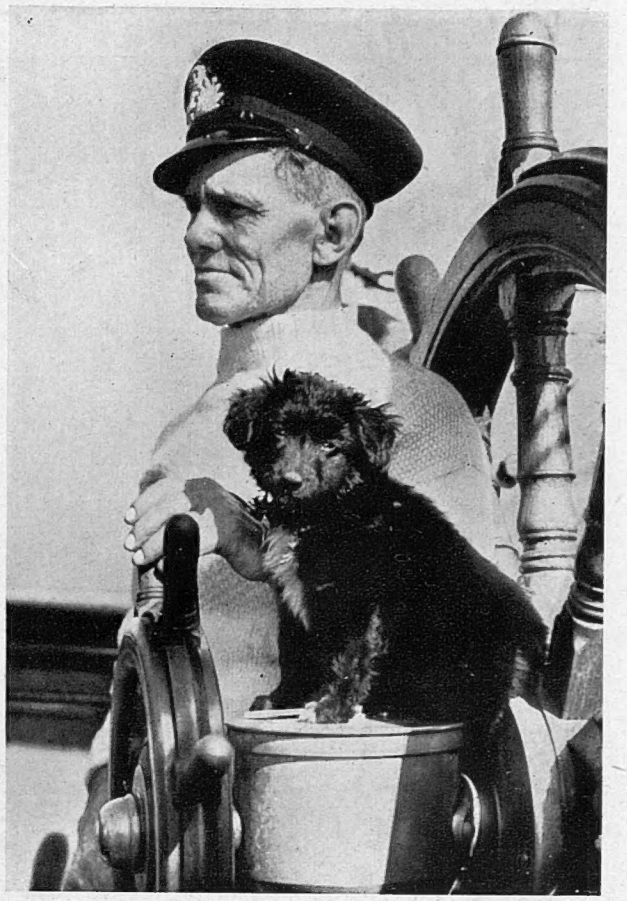
A GIANT FLOATING NAVAL DOCK TOWED SEVERAL HUNDRED MILES AROUND THE COAST: The three tugs *Superman*, *Freebooter* and *Empire Henchman* with their huge charge in mid-ocean during its protracted cruise round Britain

The waters around the coast of Britain are full of dangers for fast craft: there are enemy submarines, aircraft, naval vessels and E-boats to contend with, to say nothing of mines. So that a voyage of some hundreds of miles is not to be lightly undertaken, even by a naval vessel with a good turn of speed. Yet such a voyage has just been carried out by the most unwieldy naval unit of all—a huge floating dock, whose speed was some 4 or 5 knots! This monster dock is capable of accommodating some of the largest of British naval vessels—all but the very latest types of battleship. She was towed by three naval tugs—*Superman*, *Freebooter* and *Empire Henchman*—and was protected from enemy attack by fighter aircraft of the R.A.F., which patrolled the skies unceasingly during her passage. Preceding the tugs went the minesweepers, to clear a course for her, and astern were three destroyers, and one of the Navy's latest anti-aircraft ships: in addition a number of fast motor-launches served as a further protective screen. The brilliant task of bringing the floating dock through dangerous waters fell to a class of naval vessel of which very little is heard in wartime: they are the "Fleet Tugs," of which Britain possessed some twenty-three at the outbreak of war. The tugs range from 800 to 1,400 tons, and are capable of salvage work, as well as towage. The dock would have been a valuable haul for German aircraft, had any attempted to attack—but the audacious cruise of the dock was allowed to proceed unchallenged by the enemy!

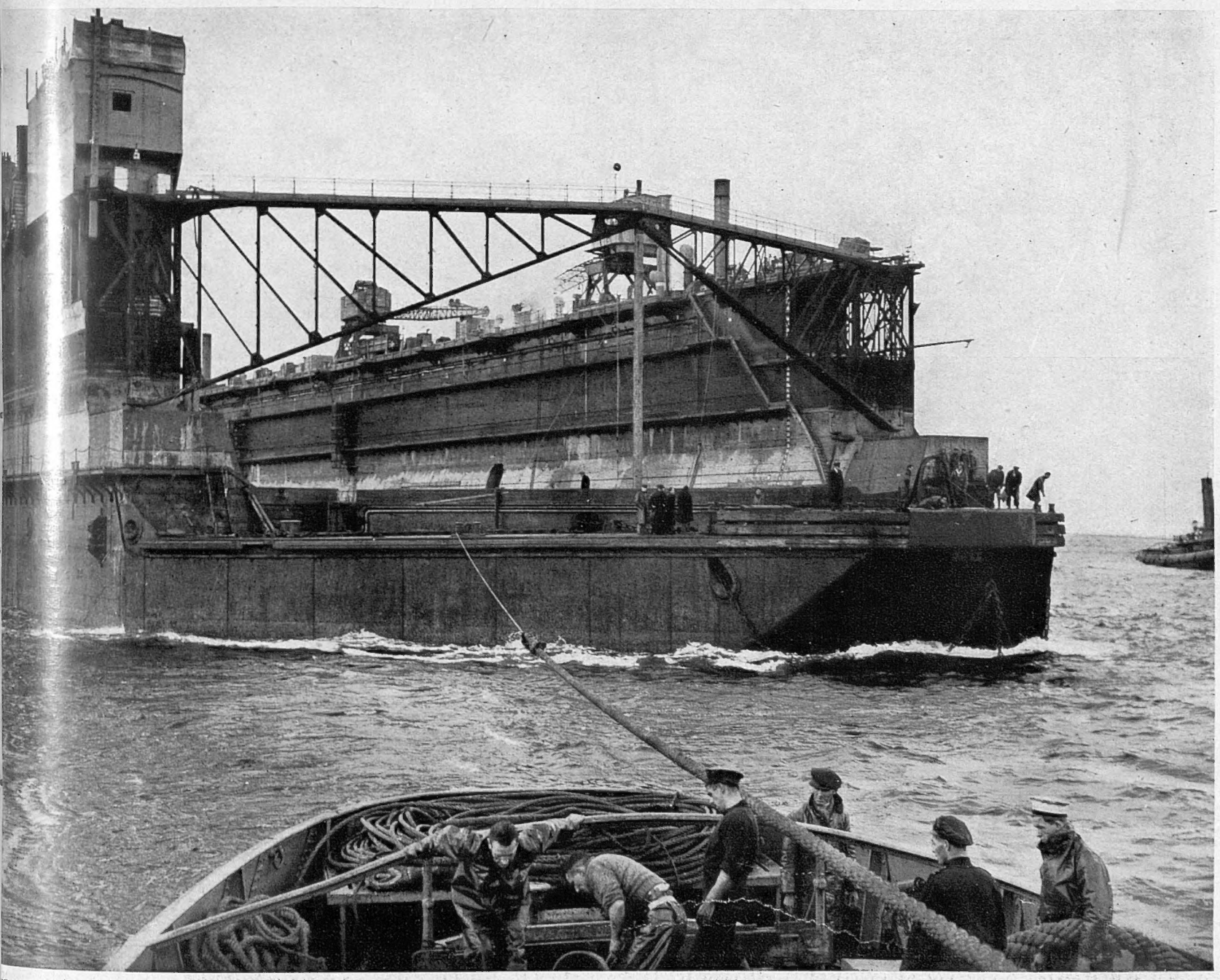


THE JOURNEY BEGINS: A broadside view of the huge dock whose journey was carried out despite enemy aircraft, E-boats and submarines. The floating dock traversed hundreds of miles of dangerous waters but was watched over by the R.A.F. throughout its passage

GUARDING THE PASSAGE OF THE FLOATING DOCK : One of the escort vessels keeps vigilant guard as the slow journey continues at a very few knots per hour

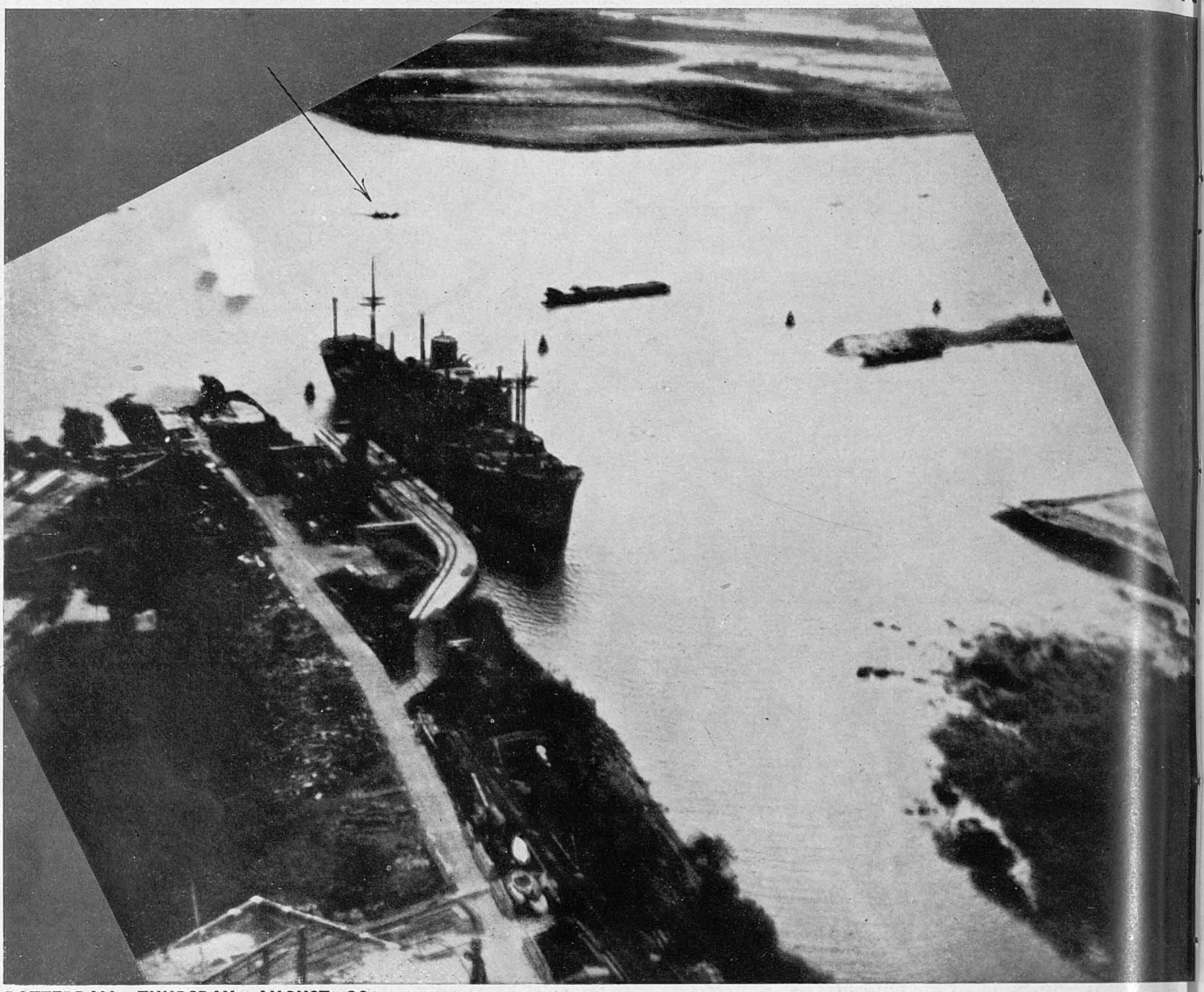


TWO POPULAR CHARACTERS ON ONE OF THE THREE TUGS : Carlo is the mascot of the tug *Superman* ; he is here taking a hand at the wheel with "Truthful George," one of the officers. "Truthful" is famed for his tall stories of the sea !

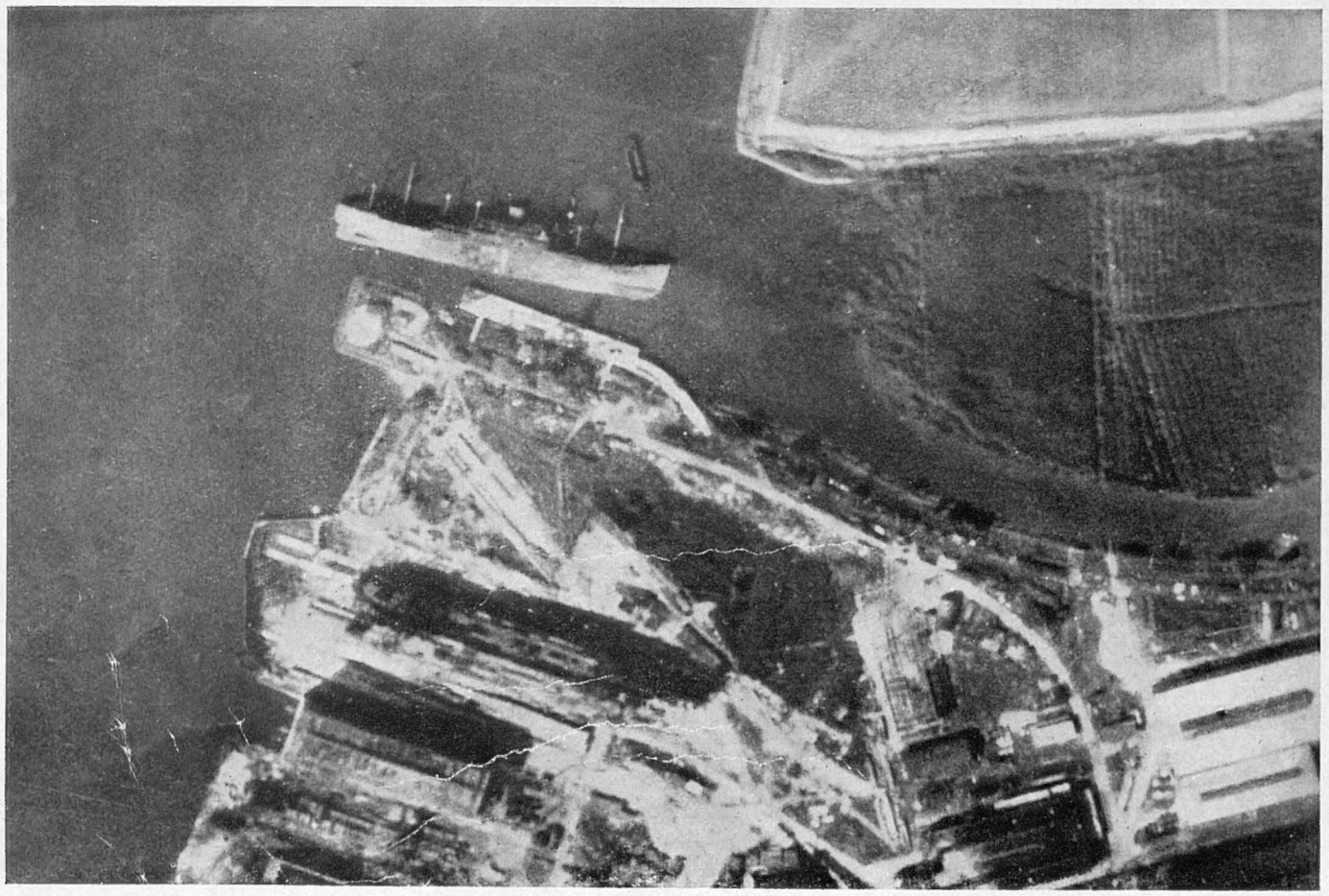


NEARING THEIR DESTINATION : The crew of one of the three tugs shortening the tow-ropes as the floating dock approaches its new home. The dock is capable of accommodating all but the very largest of Britain's naval vessels

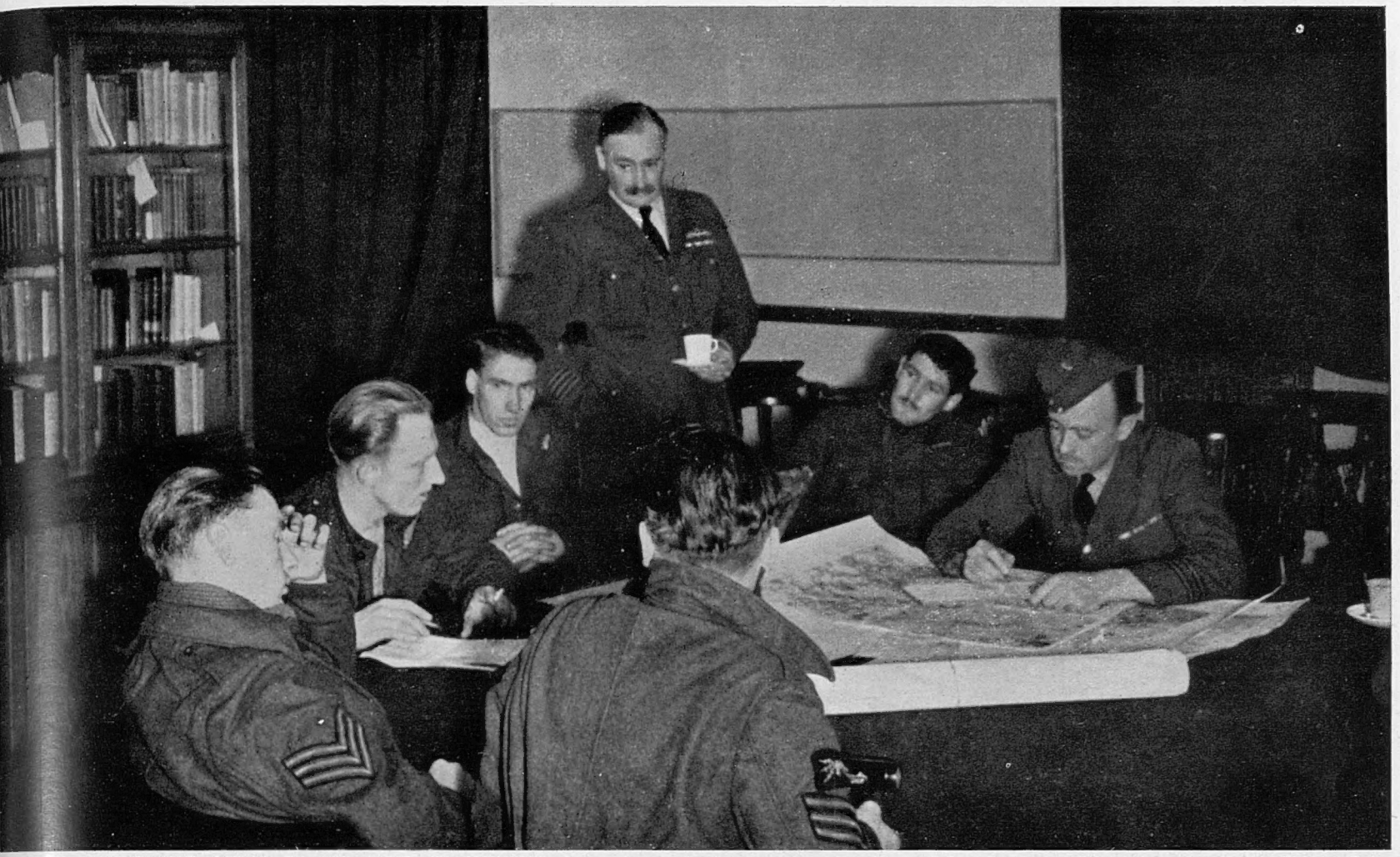
The DAYLIGHT ATTACK on ROTTERDAM — The BOMBERS of BERLIN



ROTTERDAM, THURSDAY, AUGUST 28—THE DAYLIGHT "MAST-HIGH" ATTACK BY BLENHEIMS OF THE BOMBER COMMAND. Above, a bomber (*indicated by arrow*) is coming in fast to the attack: two bombs have burst astern of the vessel, but with the next bombs a direct hit was scored, and the ship eventually sank, as another picture (*reproduced below*) definitely shows



In full daylight on August 28, a force of British bombers carried out a heavy attack on the docks and harbours and shipping at Rotterdam. In last week's issue of "The Sphere" we published a dramatic picture taken whilst the raid was actually in progress; since then the Air Ministry have released for publication the two extraordinary pictures reproduced here. In the first a Blenheim bomber (marked with an arrow) is coming in at mast height, dropping its deadly bombs as it approaches; the vessel in the upper picture is a 510-ft. cargo liner of the Noordam type—and this was the target of the attack. A photographic reconnaissance of Rotterdam disclosed that this vessel is now lying on her side at Wilton's Yard West, as shown in the second picture on the left



THE MEN WHO BOMBED BERLIN ON THE NIGHT OF SEPTEMBER 2-3 : Crews of the attacking aircraft are being interrogated by officers in the Intelligence Room immediately after their return, under the eye of their Group Captain (standing at rear)

HOW THE BOMBS ARE DROPPED ON BERLIN : The bomb-aimer, lying in the nose of the Stirling, waits for the exact moment to unload his deadly cargo

The first and second pilots of one of the Stirlings which bombed Berlin

The navigator at work in a Stirling bomber en route for Berlin

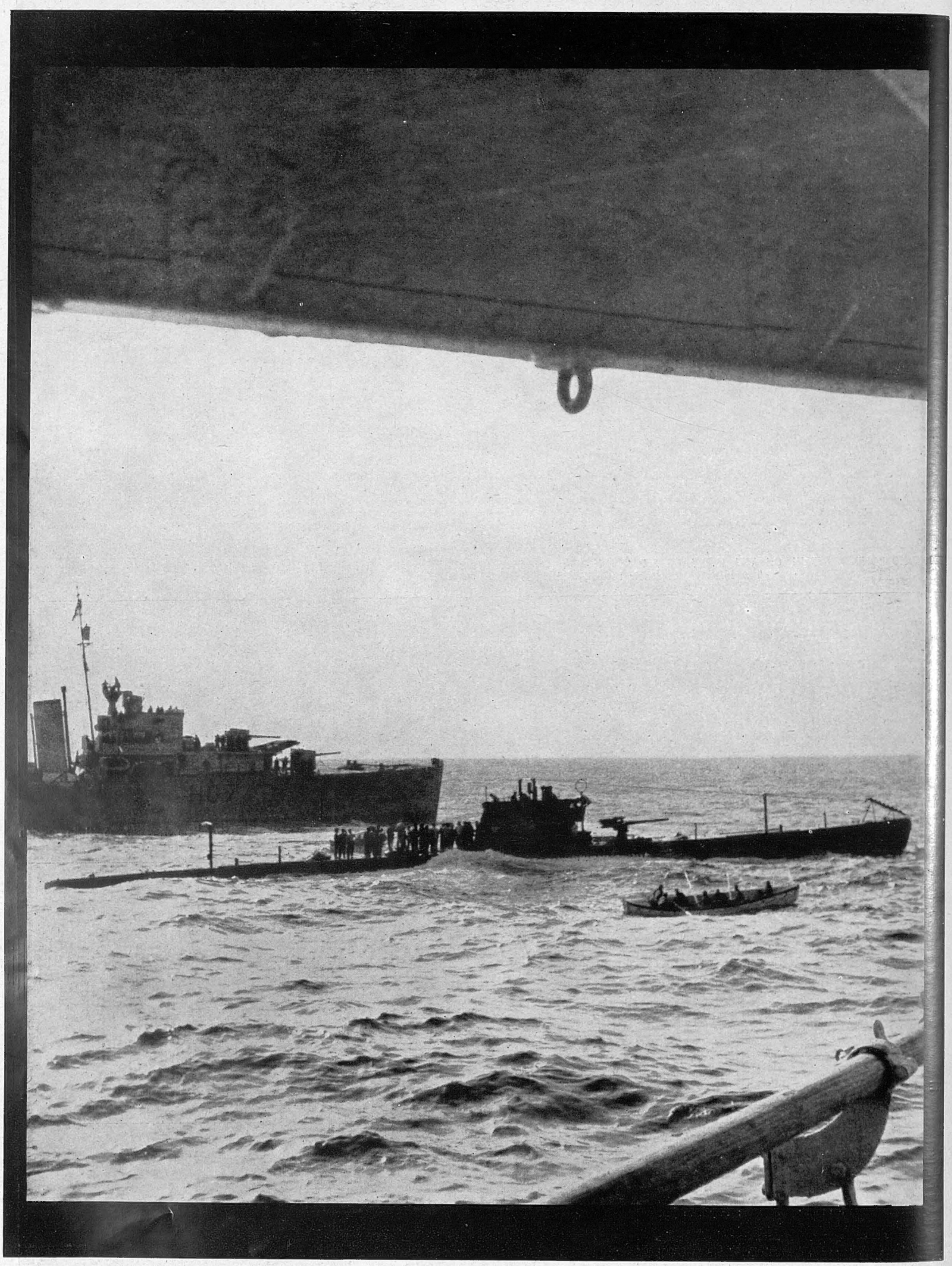
On the night of September 2-3, Berlin experienced one of its heaviest raids yet. Despite a sea of cloud, British aircraft reached the German capital, and enormous explosions followed as bombs fell from Stirlings, Halifaxes, Manchesters and Hampdens. The pictures reproduced on this page show some of the men who have actually participated in the raiding of Berlin ; they have just been released for publication by the Air Ministry.

"Many Germans must be wondering what the end will be like and how many other towns like Munster will, by the Germans themselves, be called unhappy, or will be devastated, like Aachen." So said Sir Archibald Sinclair, Air Minister, a few days ago in London. He went on : "Our photographs show widespread destruction wherever our new heavy bombs fall, and they will go on falling more and more, night after night, until the German people, shattered and disillusioned, decide for the second time that war is not worth while."

The engineer (on left) and the radio operator (on right) at their posts in a Stirling bomber

The front-gunner settles into position ready for the long journey to Berlin

THE ITALIANS LOSE ANOTHER SUBMARINE



ONE OF THE WAR'S MOST DRAMATIC PICTURES—THE ROYAL NAVY STRIKES AGAIN IN THE MEDITERRANEAN

This wonderful picture has just arrived in England from the Mediterranean, where the war against Italy is now reaching towards a climax. It shows what happened to an Italian submarine during a raiding cruise. The submarine was detected by British naval units, and was soon being attacked with depth-charges. Shortly afterwards it was forced up to the surface, and the Italian crew swarmed up on to the deck, to await helplessly the arrival of boats sent to take them off from the British warships standing by. The sailors went into captivity, and a few minutes after their rescue their submarine went to the bottom. The Royal Navy has greatly heightened its attacks on Italian war vessels of all descriptions during the past few weeks in the Mediterranean; and there is evidence that the Italians are now bordering on a state almost of panic!

WHEN THE NAVY COMES HOME

And the "Ground Staff" Get to Work on the War-Scarred Veterans—Described by FRANK C. BOWEN

A LOT is said and written about the ground staff of the Royal Air Force which is necessary to keep our planes in the air, but many people imagine that the Navy's ships can be kept at sea indefinitely without similar grooming on a scale just as big, or bigger. The sailor naturally has very much better opportunities of carrying out running repairs in a ship than the airman has in a plane, and naturally these are constantly being carried out by the shipwright and engine-room branches of every ship. Some of the repair jobs which they do at sea, even in the height of an action, are wonderful, but the authorities will not run any risk of subsequent breakdown, and all their jobs have to be done over again when the ship returns to port, although the men themselves often think it quite unnecessary.

After long and arduous service afloat: a British war vessel returns to her base after completing a long period on patrol in the Atlantic

Any number of jobs are beyond the power of the ship's crew and appliances, and these have to be tackled at the base, which is not necessarily a dockyard. Any number of stretches of calm water at home and overseas are protected with anti-aircraft guns and shore defences, and have a naval and civilian staff housed in old hulks of chartered liners if there is no available accommodation ashore. The base may not even possess a dock of any description, all the work being done by the depot and repair ships, but in other cases the Navy has its own floating docks, varying in size to take anything from destroyers to battleships, and graving docks and patent slips used for commercial work in peacetime are pressed into naval service.

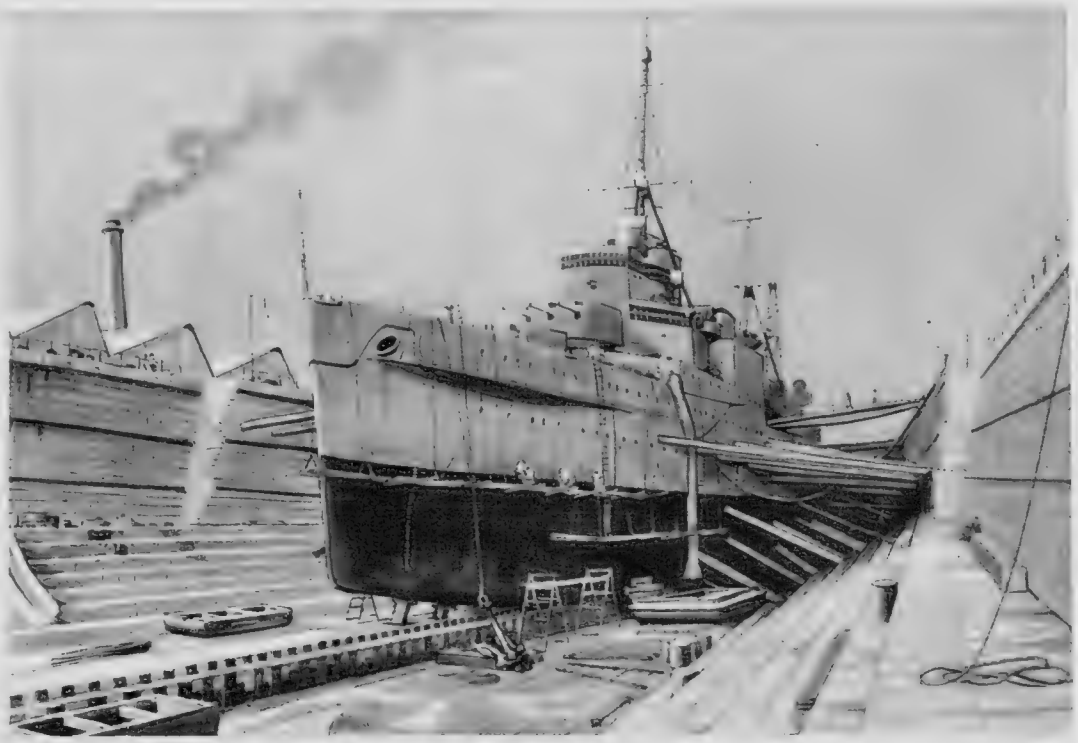
All the Navy's base facilities have to be planned with a view to indefinite expansion with or without notice. It is quite impossible to foretell exactly what will have to be done. A certain rough estimate of routine work can be based on the type of ship, her usual job and the season of the year, but that is only a basis. A five-minute brush with the enemy may mean weeks of repair work, and more damage is caused by the inevitable collisions when ships work at high speed without lights.

As far as the ordinary routine work is concerned, the submarines demand most attention. The depot ships built for their service before the war are more like liners than warships, with comfortable accommodation to rest the crews and very elaborate machinery where the liner's cargo would be. As soon as the submarine returns from a cruise her officers and men are supposed to retire to the quarters reserved for them in the depot ships, handing their own vessels over to the base personnel, but the submarine service is usually far too keen for that. A hurried bath and a rest, and they are "bearing a hand" in a score of ways.

A submarine always demands a great deal of work at the end of every trip to sea, not only in the engine-room, with its delicate Diesel and electric machinery, but in the hull and all its fittings. The strain of submarine work, especially at speed, is great, and the slightest "weep" or distortion means trouble at the colossal pressure of a deep dive. Everything has to be tested, and when the ship puts to sea again she is in first-class condition.

The little motor torpedo-boats are like racing motor-boats and have to be groomed and refitted after every run. In their case, their small size and accessibility is a great help to smart work.

The destroyers need nearly as much attention as the submarines, and externally their specially-designed depot ships look similar. Internally each is adapted for its particular purpose. The destroyer is not as delicate as a submarine, and her crew do not require the same rest in the depot ship, but she is constantly in trouble. The tremendous pressure at which the destroyers work against enemy submarines and aircraft, the incessant minor actions in which they are engaged, which seldom find their way into print, and the high speed which they maintain in all conditions of weather combine to do infinite harm to the hull. Leaks are always developing, not a few of them from the shock of the ship's own depth-charges, and it is not unusual to see a destroyer coming home after a bout of bad weather with her forward guns out of position and her bridge forced back bodily by the weight of the water into which she has been driven.



A CRUISER GOES INTO DRY DOCK FOR OVERHAUL—*Drawing by H. M. Le Fleming*

Deck fittings are naturally constantly being damaged at sea, stanchions bent, boats and their gear smashed, and troubles of that sort are put right as quickly as possible. Engines and boilers, subjected to the most trying conditions, always have to be carefully surveyed, for the slightest "weep" may develop into a serious leak the next time the ship is pressed. It is the smaller units which demand most attention of this sort; the big battleships are not subjected to the same strain, and they have more men of their own to do the work.

Every ship has to be put into dry dock, or lifted on a floater, as frequently as possible, for the marine growths, both weed and barnacle, develop very quickly and immediately impair both speed and handiness. If a ship is out of dock for three months on ordinary service she will demand ten per cent. more power to make her speed, and after that it goes up very rapidly. Marine growths also make a ship very sluggish in answering her helm, and that is of great importance, especially to a destroyer hunting submarines or a submarine being hunted. Luckily, the scrubbing-down process, by modern methods, is a very quick one, and the ship is soon afloat again.

There are many other services in the bases which demand a staff. The smaller vessels draw their pay from the accountant officers in the depot ships, and they want re-storing every few days. As far as can be foreseen, these stores are always awaiting the return of the ship to port, already sorted, but it is impossible to foretell exactly, and wireless may only be used in an emergency. Ammunition supplies have to be topped up, and any which has been in the magazines longer than a certain time is taken out and changed for new.

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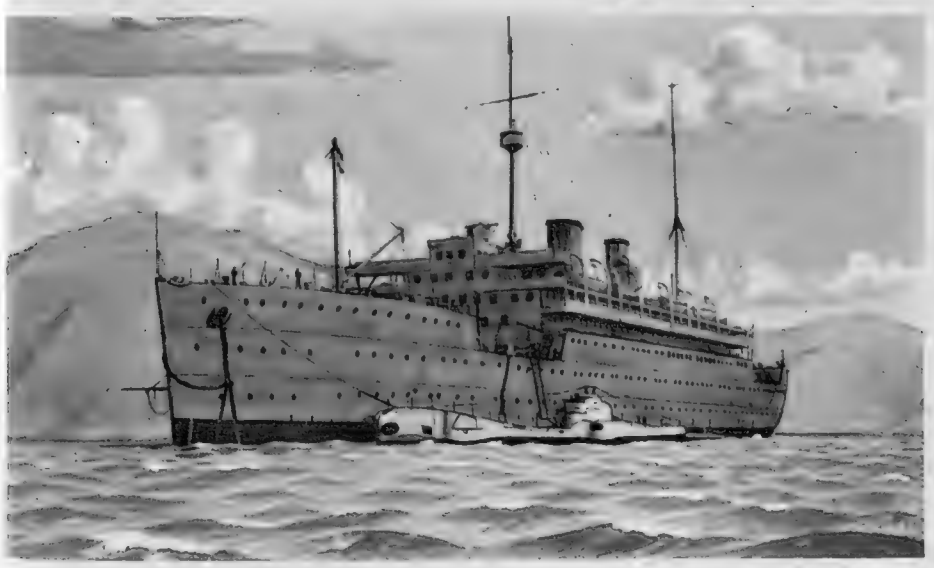
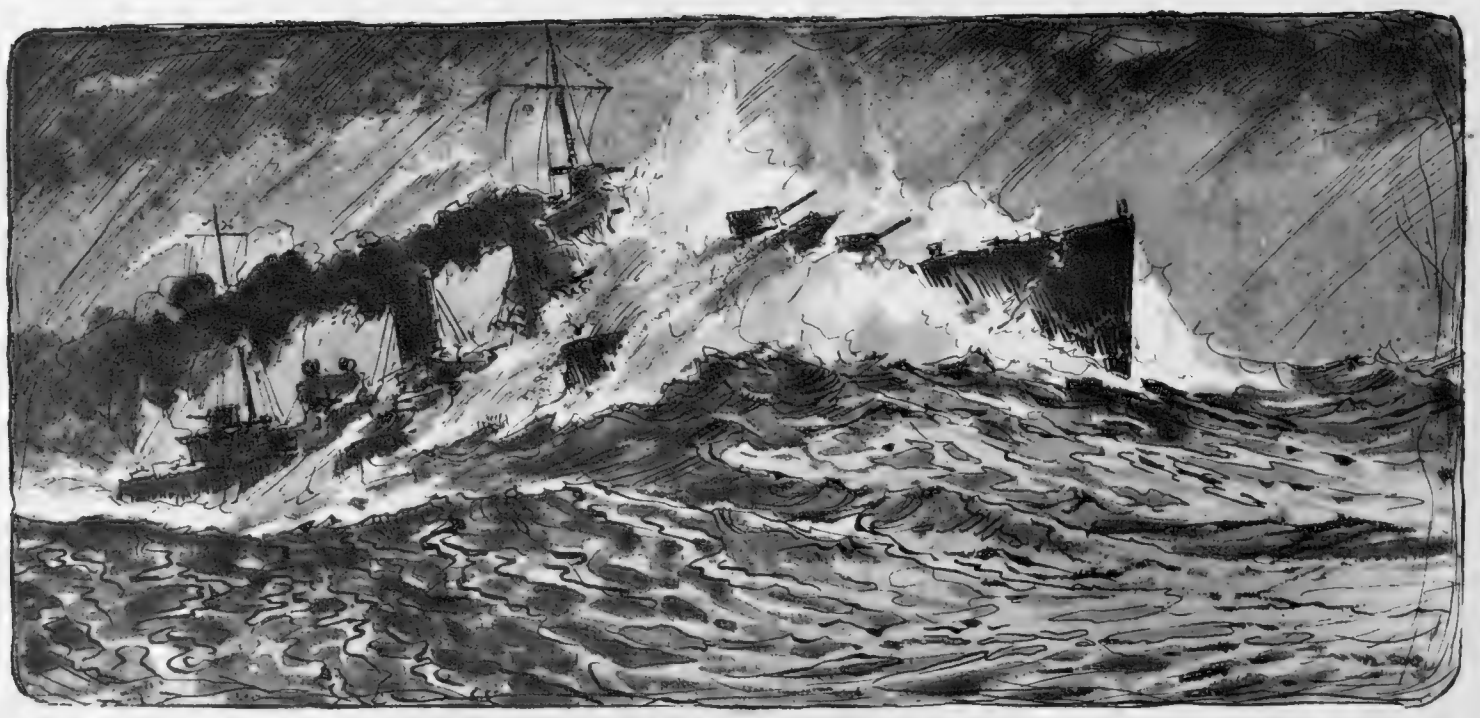


A SUBMARINE RETURNS TO HER DEPOT SHIP FOR REFITTING: She is moored alongside the mother-ship in a hidden harbour—*Drawing by H. M. Le Fleming*

There is one very interesting point to be remarked in connection with the above drawing. As the depot ship will probably be at her moorings for a considerable period, she is anchored with a "bridle" to allow her to swing easily without making a mess of her cable. This means that the starboard cable is passed round the stern of the ship and shackled to the port cable. When the tide rises and she rides more comfortably to the other side, it is only necessary to slack out the port cable and heave in the starboard one, which will bring the bridle and the two anchors on to the starboard side



WHILST PLOUGHING THROUGH A HEAVY SEA, a destroyer often puts her nose in deep, thus shipping a great volume of water, which can quite easily damage her bridge structure

A "LAME DUCK" BEING riddled.

(Continued from preceding page)

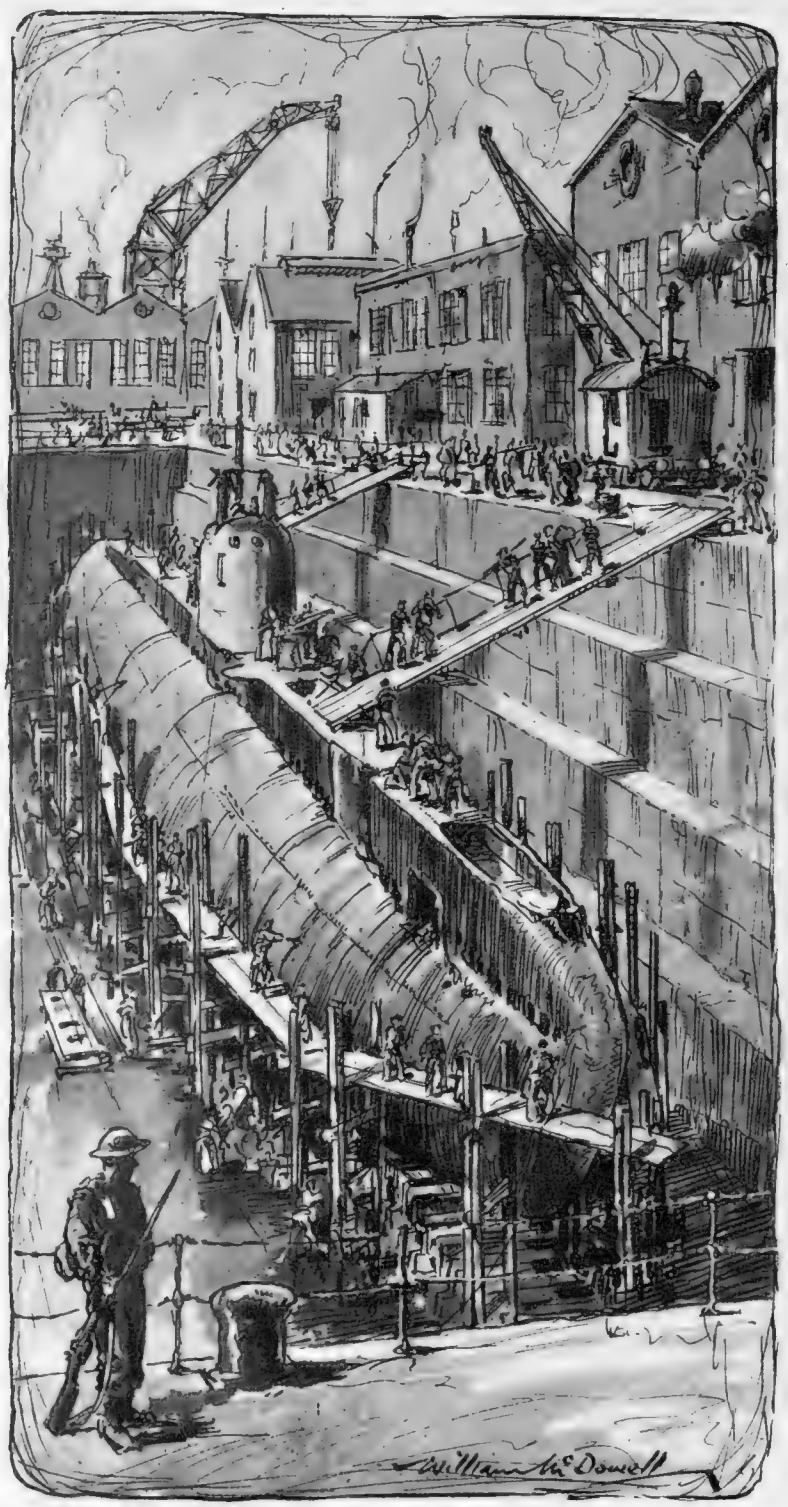
The N.A.A.F.I. organisation supplies the food required for the ship's messing and the little luxuries for her canteen, and tankers are always in attendance waiting for the ships to come alongside and fill their bunkers.

All those things are done at the bases, either permanent or temporary, but an immense amount of work is also done at the big dockyards. Periodically every ship must have a big refit, when she is turned out nearly as good as new, and in peacetime this work is always done at the royal dockyards. In war it is so much increased that the mercantile shipyards have to undertake a good deal of it.

Depending on how well the ship can be spared from her squadron, advantage is taken of her return to dockyard hands for action or accident repairs to carry out as much of the refit as possible. Very often the ship is paid off, her crew being dispersed to other vessels, and she is then stripped right down for all defects to be remedied and numerous alterations to be carried out. Constant work at high speed, prohibited by its cost in peace, is apt to reveal weak spots which must be attended to. Actual defence against aerial attack may show that a mast or funnel is a handicap; it cannot be removed, but it can be radically changed, so that the outward appearance of his Majesty's ships is constantly being altered in wartime, and pre-war photographs would not give much information to the enemy, although they would dearly like to obtain up-to-date ones. Extra guns or fittings are constantly being installed and others suppressed if they have proved useless.

All this base and dockyard work demands a very large personnel. On board the depot and repair ships at the bases it is practically all done by naval ratings, assisted by a few skilled specialists from the dockyards. In the commercial establishments the men who normally work on merchant ships do practically all the necessary jobs on men-of-war, but a certain number of dockyard men are lent to them, generally for special jobs. The dockyards themselves have their civil "mateys," a proportion on the establishment with a pension to look forward to and the remainder nominally casual, although they are highly

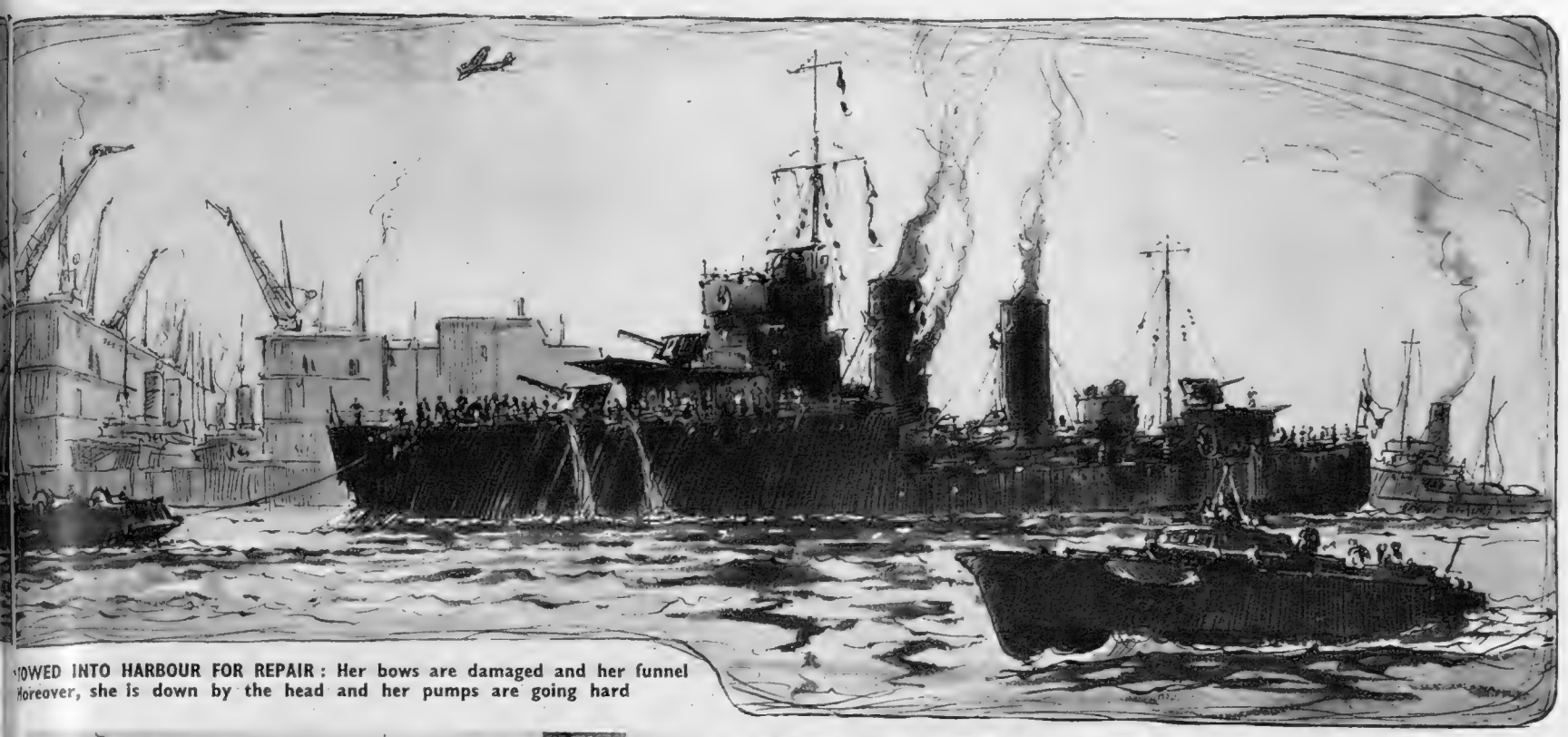
Drawings by
Wm. McDOWELL



A BRITISH SUBMARINE, after hard service at sea in all weathers, is put into dry dock for a thorough overhaul

BACK IN PORT AFTER A GRUELLING SPELL AT SEA, the crew of a British battleship "smarten up ship" with a much-needed touch of paint

A BRITISH CRUISER AT SEA: Putting up a smoke screen to cover the activities of the destroyers



TOWED INTO HARBOUR FOR REPAIR: Her bows are damaged and her funnel Moreover, she is down by the head and her pumps are going hard

A FREE FRENCH SUBMARINE COMES HOME, after a successful attack on an enemy convoy well within Nazi waters—*A picture taken at a Scottish port*

REPAIRING SHIP DAMAGE AT THE BASE: On the right a workman is cutting out a buckled plate with oxy-acetylene cutter; in the centre, holes are being drilled for new rivets. On the left a rivet boy is "hotting-up" fresh bolts

skilled men and often work for years without a break. The more responsible posts are held by civil servants, with a few naval officers and warrant officers to help with their sea experience, and in charge of all the work are the officers of the Royal Corps of Naval Constructors who designed the ships in the first place. In charge of each dockyard or base is a senior naval officer, his rank varying from Vice-Admiral to Captain according to the importance of the post, who is in supreme command under the Commander-in-Chief of the station for whom he acts as deputy.

INSIDE THE VESSEL UNDER OVERHAUL: Checking up ammunition in the ship's magazine on return to the base

SCRAPING AND PAINTING THE SHIP'S BOTTOM: It is highly important to keep the ship's bottom clean, particularly with fast vessels, where the extra "skin friction" (caused by paint roughened by sea action, or by marine growths, etc.) will reduce her speed considerably. As soon as the vessel is dry-docked, the men start working from pontoons, and as the water-level goes down as the dock empties, the scrapers are at work on the under-water part of the hull as soon as it is exposed. Most of the work is done by hand-scrapers, wire-brushes, etc. Sometimes a small pneumatic tool is also used for loosening the "scale" (as in the case of the kneeling figure in the above drawing). Finally, when the hull has been cleaned, the painters coat the bottom with "anti-fouling" composition

THE NON-INVASION COAST

A Tour of Inspection of the Blackpool—Lake District Hinterland; and a Description of the Conditions Prevailing in the Isle of Man in Wartime

By FERDINAND TUOHY

THE invasion (or prohibited) coast seems to extend the whole way round the United Kingdom from the Clyde to South Wales *via* Caithness. Far be it from me to infer that North Wales, the Blackpool region, Lakeland and the Isle of Man are not adequately prepared against invasion too, yet conjointly they have come to figure in the popular mind as "safe areas" where Civil Servants are preserved in their thousands and self-evacuees in their tens of thousands.

Well, I did not get to Llandudno and Colwyn Bay, but with all regard to Blackpool, I much prefer to be unsafe in Sussex-by-the-Sea. If you 've got a job at Blackpool, then it 's fine. If you 're the normal stuff of Blackpool, trippers from industrial Yorkshire and Lancashire, it 's also fine. But for strangers with nothing to do, to go to Blackpool to escape problematical "blitzing"—frankly, I don't call them lucky people at all. There they were, for miles from Red Bank almost to the pleasure beach, still seated over long-drawn-out breakfast and newspapers and the clock approaching eleven. Those front rooms and porches exhaled just one thing: killing time. And as Blackpool is windy and wet, the bored sessions are correspondingly frequent.

Blackpool has tremendous galas for the young and lusty and lip-sticked; its cinemas and cafés are packed. But Blackpool lacks all the things we lack in London, only more so. Penalty of being overcrowded and visited in bulk daily. No this, no the other. Queues right and left.

Gazing towards the sea, on the horizon, I noted that if beach-protection differs from that in the south, it is still very much present. Firm sands can be risky, and here are miles of them. Whether the total absence of bathers at Blackpool and at other places was due to the climate or other causes, I forgot to inquire. The climate sufficed in my case.

The four-hours jog across to Douglas was horrid. One did not mind the *ersatz* steamer, or the crowding, or the gale, but one refused to believe that tin had run so short as to remove all basins. I had just seen Michael Redgrave and Co. ick-icking in an emigrant hold 100 years ago (*Atlantic Ferry*) and here it was over again, briefly but indubitably. Yet how lucky one was to be in a steam-packet at all. The last I 'd been in was fifteen months before, out of St. Malo. How a ship smelled good again!

The Isle of Man cost the British Government about £550,000 to purchase. It is now costing many thousands more, thanks to the Home Office requisitioning quarters for internees, which have never been used, or, if temporarily used, have been badly damaged.

I arrived in the island to find Civil Defence on the point of being organised after two years of war. Heretofore an amalgam of the police and the Loyal Manx Association appears to have been chiefly responsible. A central control-room is now to be set up for the Island, and police officers are to be seconded to train fire-fighters and wardens. Five hundred of the latter are being advertised for. And a boy messenger service is wanted in case bombing breaks communications—there have been several bombs but no casualties.

As a firm believer in Civil Defence being united to military defence, and as one who believes in the accrued importance of islands in the new aero-naval warfare, I fail to see the sense in leaving one definite part of the defence of the Isle of Man to Mr. Herbert Morrison in London. Manxmen refer one back to this far-flung politician, the scope and variety of whose duties in this war have to be digested to be believed.

There may be small chance of a Nazi attempt on the Isle of Man. It is all of 400 miles direct flying from the nearest Norse airfields. Yet if the Nazis *could* make a diversion on Man, they 'd command some pretty seaways, and other things, and there 'd always be the chance of them freeing two or three thousand of the ultimate—and toughest—pro-Hitler internees. These, of course, are also under Mr. Morrison, to whom I commend the opening of this week's leading article in the *Isle of Man Times*: "The strengthening of the Island's Civil Defence system proceeds far too slowly, but some attempt is being made at co-ordination." After two years! A drawback with the protagonist of "Go To It" is that he himself has to be so pushed.

Income-Tax. The man earning £500 a year now pays 2s. 6d. in the £, just raised from 1s. 2d. The pluto-democrat earning £1,000 a year now pays 3s. 1d. But don't plan to cross to Man. Unless you get your money from the Island, or have been resident there before and since the war, nothing doing. The really lucky people have been evacuees from the Channel Islands. They hardly paid any income-tax there, and, not coming under the English tax, escaped it when they went to Man, whose local tax they now pay. All the more reason why such "Come-Overs," and other ones, should not get uppish over the restrictions in Man.

Restrictions! The only commodities rationed are sugar, cheese, tea and imported butter. Manx butter is unrationed, and so are eggs and all forms of meat, bacon, fats and jams. But you must register at specific shops. Then they sell you as much as you ask, or as they care to give. A family of five can register at five different butchers and——but this is hardly fair. It 's making me hungry, too. Let me just add for make-weight: no cigarettes, and little "candy" or bottled beers. This last is hardly surprising, seeing that the bars are open from 10 a.m. to 10 p.m. I hazarded to a publican that this must have led to some remarkable sights in past Wakes Weeks. "They drink more on the Island now," he surprised me, "with the Forces having so much time on their hands." Well, on all-dry Sunday, the Forces must suffer akin to the legendary Arab conking from thirst in the desert, with water on the knee.

The chief surplus that strikes slimmed ones from the mainland is of meat—gorgeous joints of all kinds piled high in the windows of Strand Street! This was what led a local journal, no doubt, to object to "unwanted visitors" who would "see our plenty and give a bad impression of us on the mainland." Douglas objecting to visitors! Then the Island must be doing well? Yes and no. It has lost its three months of riotous spending by visitors of the Two Roses. It has gained perhaps 15,000 in steady, spending population, made up of the Forces, the "Come-Overs," and the internees and their friends. Against this, the Island has seen many of its younger men go off as volunteers.

The truth seems to be that a section of Manx people have got something on their minds. They think they ought to help England more. In money and in man-power. Yet they shouldn't imagine we envy them for their plenty. Why shouldn't they eat it if they raise it and we don't ask for it? That 's just the luck of events: Man happens to be a rare haven in times of rationing and aerial warfare. If the Island desires to help England additionally (and its taking of the internees is no mean service), then I humbly suggest such things as (*a*) taking "blitzed" children from future Merseyside raids; (*b*) rationing—seriously—imperative imports like coal and petrol; (*c*) putting up a proper Civil Defence system, in which connection the Islanders might well copy Hull and do things first and tell the Home Office about them afterwards.

Travelling around the Island, many sections of which are closed, like Snaefell, I failed to get the expected impression of "rich escapees" thronging the shops and links and beaches. On the contrary, everywhere a great emptiness and most of the cafés and normal pleasure places closed. That there exist slackers in slacks in flower-rimmed villas is certain. But they don't obtrude, and they positively are not in the number we 've heard. After this week male "Come-Overs" must register. Whether some will be checked off the Island remains to be seen, but in that case it would only be fair to check female "Come-Overs" under forty too.

And so back to the mainland, careful not to bring any of Manxland's plenty aboard the mailboat except kippers and cooked meat. Other things are apt to be taken from you on arrival at X port.

The population of the Lake District has increased by about a quarter, largely composed of unofficial evacuees. Here, as elsewhere on the Non-Invasion Coast, no allowance is made for travellers on war work. Hotel on hotel jammed with squatters and not a bed for the person even on an official job. Such arrivals may be resented in tones that say: "What d'you want to butt in on us for? Can't you see we 're fully taken up already?" There 's a certain selfishness abroad which prompts one to hand out an exotic line of language. You strike a kindred attitude elsewhere—chiefly apparent in the refusal of people with sizable houses to aid willingly in any evacuation scheme—but somehow in these tucked-away dales it is more objectionable. Safety and comfort, with foreign maids and menservants, are overdone. Quite a few of these people, you feel, will collect money for Spitfire Funds and refuse to billet a tragic, bombed-out mother and child from Manchester.

The smaller homes have for the most part taken in whom they can. When further accommodation in this cushy backwater of the war is required for women and children under the latest Government evacuation plan, billeting officers will have to brace themselves to face the maids and menservants. Should the raids grow fiercer, there must be a reconsideration of the Non-Invasion Coast, many of whose squatters have left perfectly good basements in unattended town, suburban and even country houses. They 've had a year: it 's time others, less fortunate, should benefit too from England's few war sanctuaries.

For all its risks, the Invasion Coast has two things over its safer counterpart which commend themselves to me: a closer civilian comradeship and an absence of killing time.

THE ARMY'S NAVY

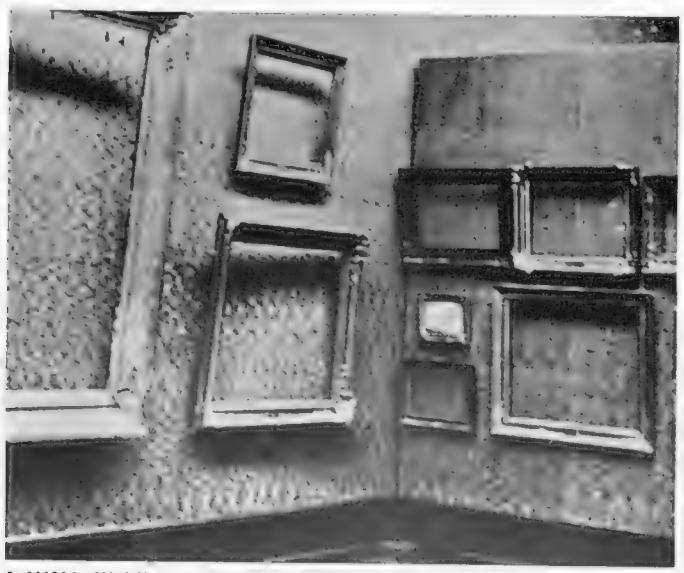
THE BROADS FLOTILLA, OR THE "ARMY'S NAVY": Two of the motor-craft on patrol on the Norfolk Broads in their fast motor-boats

MEMBERS OF THE CREW OF ONE OF THE MOTOR-BOATS LEAP ASHORE FROM THEIR VESSEL ON PATROL: The Broads Flotilla, formerly operated by the Navy, has now been taken over by the Army, and has become part of the "Army's Navy." The Flotilla consists of fast armed motor-boats which patrol the inland waterways and prepare for any enemy seaplanes which might attempt a "landing"

BEHIND THE VEIL IN NORWAY

Pictures Which Show What is Happening Under the German Yoke in Scandinavia

A NAZI POSTER RECEIVES ROUGH HANDLING from the Norwegian patriots who have substituted a "V" sign for Victory alongside

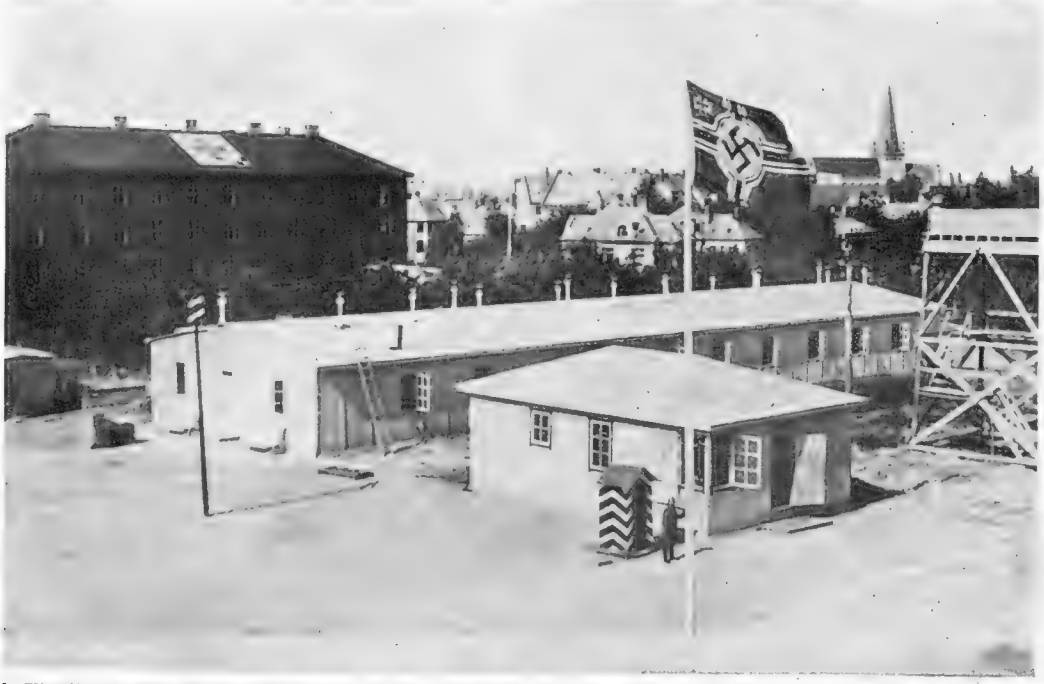


A WALL IN THE NATIONAL GALLERY AT OSLO after the pictures had been taken from their frames by the Germans and sent by them elsewhere

These pictures, smuggled out of Norway, show the trend of public feeling in that country, despite the rigours of the Nazi occupation. Though the country and its treasures have been desecrated by ruthless hands, and though the food they queue up for is limited, the Norwegians still have the courage to defy the invaders. Everywhere "V" signs are planted overnight, alongside Nazi posters and proclamations and despite heavy penalties when caught. The picture *on the right* is particularly interesting: on a shop window a Nazi had chalked up the words: "Palestina Kaller: joder tales ikke i Norge" ("Palestine Calling: Jews are not wanted in Norway"). The picture shows how this sign appeared after Norwegian children had finished with it!

OSLO WAS ONCE A CITY OF PLENTY: To-day the inhabitants have to queue up for most of the things they need. In this queue people of all grades of society are represented—a bitter commentary on the "freedom" which the Nazis bring!

AN ANTI-JEWISH NOTICE IN A NORWEGIAN SHOP WINDOW, and how the Norwegians almost obliterated it, despite heavy penalties if caught *(see note on left)*



A FURTHER INSTANCE OF THE MANNER IN WHICH THE GERMANS ABUSE THE RED CROSS: A hospital, prominently marked with the Red Cross, which is being used to shield an encampment of German Army huts at Trondheim

Another view of the Army encampment at Trondheim which is shielded by the Red Cross

A typical ruse of the German occupants of Trondheim is to situate their Army huts all round the Red Cross hospital in one district of the town, so that they are afforded protection from the R.A.F. bombing attacks. The hospital, as British photographs show, is a large brick building with an unmistakable Red Cross on its roof: German Army huts now nestle all round it. The hospital is owned by the Red Cross organisation and is not therefore State property. The population of Trondheim is indignant at this latest exhibition of German unscrupulousness

THE STRUCTURE OF SOVIET RUSSIA

"The First Federation of Working-class States the World has Known" Described by H. J. SHEPSTONE

IN MOSCOW : Josef Stalin, Premier of Soviet Russia, with Mr. Harry Hopkins, President Roosevelt's personal envoy. The picture in the background is of Lenin, the founder of present-day Russia

RUSSIA claims that her people are the freest in the world. That the masses of her people are in full agreement with Government policy and are ready and even anxious to co-operate with the wishes of the authorities cannot be denied. When the Revolution broke out, some 75 per cent. of the population were illiterate and the greater majority were little removed from serfdom. To-day the people are educated. They are serious, sober and full of enthusiasm for those ideals and beliefs which the new order has introduced.

Yet your typical Russian retains those characteristics which have always distinguished him. He is stubborn, yet patient, ready to eat and drink if he can, but able to go without if he must. He is more capable of absorbing what he is told than of logical reasoning. An invaluable asset, regardless of party or rulers, is the national spirit among the people. They have a love of country and a pride in their country. Personal discomforts do not matter if it is for the benefit of the Motherland.

Russia is the first federation of working-class states the world has known. It comprises eleven autonomous republics, sixteen autonomous provinces and a host of autonomous regions or territories. The Russian Soviet Federative Socialist Republic consists of some fifty autonomous republics and regions. The Ukrainian Soviet Socialist Republic consists of eight autonomous republics and regions, and the Georgian Soviet Socialist Republic three autonomous republics and regions.

Each of these republics, as well as the autonomous regions which constitute the U.S.S.R., have their own constitution and their own supreme governing bodies. Their constitution is based on the same form of government as that of the Union as a whole. Thus every republic has a similar body of congresses to that operating from Moscow for the whole Union, namely, its Congress of Soviets, Central Executive Committee, with its Presidium, Council of the People's Commissars, and its own local institutions—county, regional, and district congresses and its city and rural soviets.

The village soviet—and every village has its soviet—elects its representative to the district soviet. The district, in the same way, elects its representative to the regional soviet, the regional to the town, the town to the city, and the last-named to the Supreme Council at Moscow. All the way up there is this complete conformity. The number of deputies that may reach Moscow from any particular republic depends upon its population. There is one deputy for every 300,000 of the population. It may be added that the autonomous regions vote in the same way.

Though the republics look to Moscow as the final authority, they all possess equal rights and enjoy a large measure of self-government. They make their own local laws and control their own domestic affairs and have complete independence in all matters not coming under the direct supervision of the Supreme Council at Moscow. The latter is responsible for international relations, the organising and control of the armed forces, the direction of transport, postal and telegraph services, foreign affairs, etc.

The right to elect and to be elected to the soviets is enjoyed irrespective of sex, religious beliefs, race, nationality, whether settled or nomadic, by all the citizens of the republics who have reached the age of eighteen and earn their livelihood by productive and socially useful labour, as well as by members of the Red Army and Navy and citizens belonging to the category of workers but incapacitated from labour.

Until 1936 voting at elections was by an open show of hands. Now it is by secret ballot. There are no opposition candidates, for the simple reason none are brought forward. The candidates are selected by the Communist Party organisations, trade unions, co-operatives, youth organisations, and cultural societies. It is the duty of every elected candidate to report to the electors on his work and if it is considered unsatisfactory he is liable to be recalled. The period of office is for four years.

The Supreme Council at Moscow, the goal of all elected candidates, has two Chambers; the Council of the Union and the Council of the Nationalities. The former consists of representatives from the various republics in proportion to their population, thus assuring adherence to the principle of the united state. The Council of the Nationalities is composed of five representatives from each of the republics and one from each of the autonomous regions, irrespective of population. This safeguards the federative principle, and makes certain that, no matter how small they may be, all nationalities represented on the Council may actually participate in the settlement of issues effecting the Union as a whole.

HOW PRESENT-DAY SOVIET RUSSIA IS BUILT UP of "Republics," autonomous "Provinces" and other Territories : Included in the above map are eleven autonomous Republics, sixteen autonomous Provinces and a host of other autonomous regions and territories. Each has its own constitution and supreme governing body, and each is also represented in the Central Supreme Council at Moscow, as outlined in the accompanying article

THE GERMAN SOVIET IN THE HEART OF RUSSIA : The "German Volga" is an autonomous Socialist Soviet Republic centred on the great river and bounded by Saratov to the west and the Khirgiz on the east. Its inhabitants, despite that they are of direct German descent, are Russian in thought and sentiment. There are 500,000 of them, and although they were brought into Russia at the end of the eighteenth century, they have preserved all their former characteristics, their language and their own national culture. They have sent resolutions to Moscow identifying themselves with the great national effort

Thus the autonomous regions, Russia's minorities, are duly represented. In the Soviet Union we have over a hundred different races, speaking many tongues, and representing varying degrees of culture, custom and religion. But they are assured of a considerable amount of freedom and can develop their national characteristics and culture without molestation provided that the fundamental laws laid down by the supreme organs of the Union are not violated. Indeed, it is definitely laid down in the articles of the Union's Constitution that all citizens of the Union —that is, in both the republics and autonomous regions, irrespective of sex, race or religion—have the right to work, to an education, to rest and leisure, maintenance in old age, and also in cases of sicknesses or loss of capacity to work. There is also freedom of religious worship, though it should be added that the Church is separated from the State, and the school from the Church.

The two bodies, the Council of the Union and the Council of the Nationalities, submit laws to the Central Executive Council. At present the councils are meeting in the Kremlin. In the near future, however, they will be housed in the superb colossal Palace of the Soviets, now rapidly taking shape on the site of the great Cathedral of the Redeemer, which was removed by blasting some ten years ago. The cathedral, which was built in commemoration of the defeat of Napoleon, was capable of holding 10,000 worshippers. The new Palace of the Soviets will be the tallest building in the world, rising in tiers to more than three times the height of St. Paul's, overtopping New York's loftiest skyscraper by 23 ft.

RUSSIA'S SECOND LINE of INDUSTRIAL DEFENCE

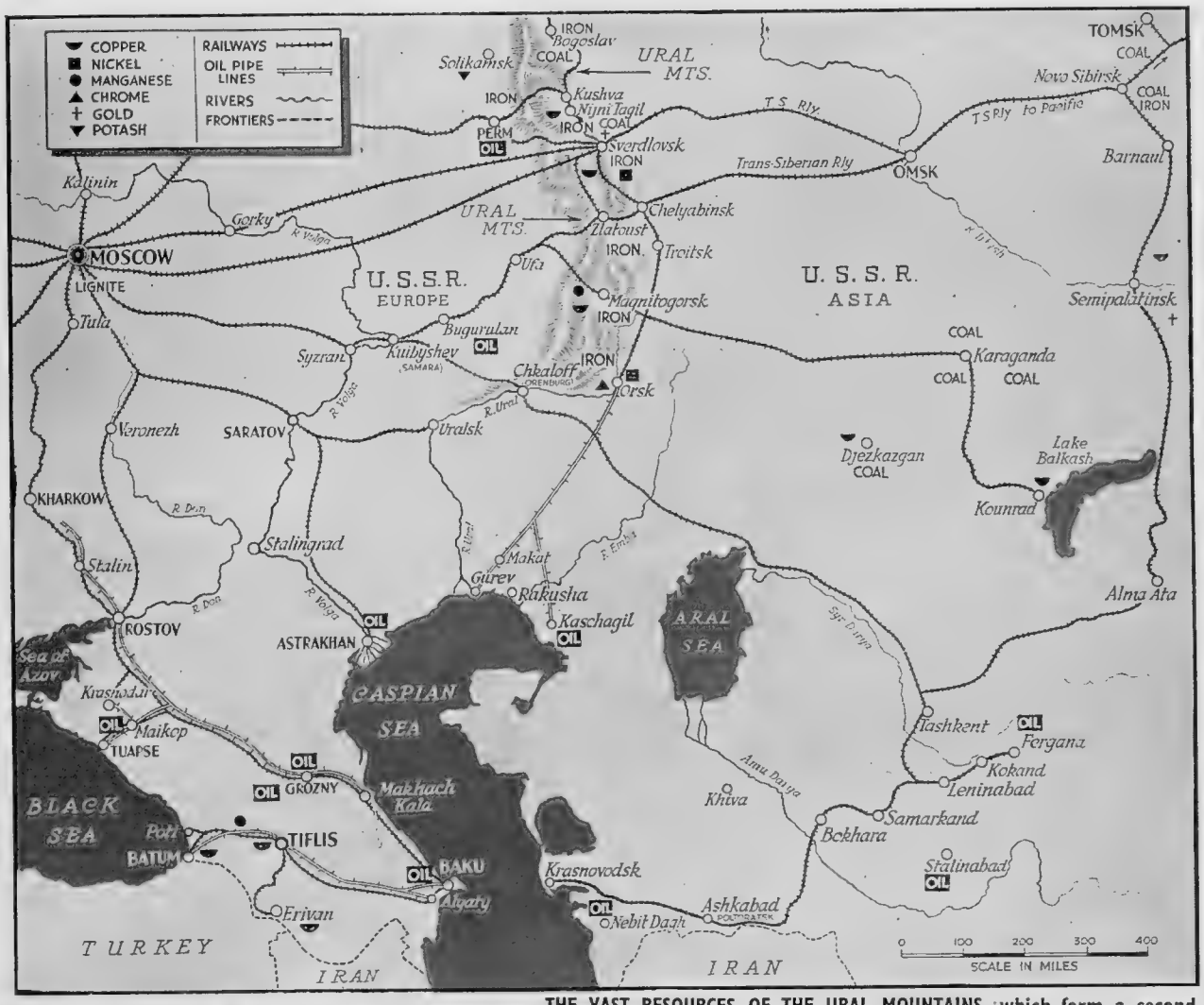
By ROBERT FINCH

THE Russians have never trusted the Germans. They have long realised the peril of attack from the west. Years ago they began to develop centres of heavy industries, not only in the Urals, but also in Siberia much farther east, in regions where accessibility of raw materials and fuel provides the essential conditions. Towns sprang up where only scattered farms previously existed; new mining regions were opened up amid mountains and forests, steppes and deserts. Many of these new developments were secret—guarded by rigid restriction of travel and by close surveillance of travellers.

The low middle Urals, with passes only 1,300 ft. above sea-level, are crossed by several railways, the chief of which are the two lines—(1) *via* Sverdlovsk; (2) *via* Zlatoust—meeting at Omsk in Western Siberia on the Trans-Siberian Railway. It is the middle Urals which contain over 25 per cent. of the mineral resources of the U.S.S.R., and it is mainly in this region that the greatest developments have taken place.

To-day the Urals stand first in Russian copper production; second only to the Ukraine in iron and steel output; third (after the "Donbass" in the Donetz basin and the "Kuzbass" in Siberia) in coal production and fourth in the production of electricity, fourth in oil production, and fourth in engineering output.

The chief iron deposits lie near Magnitogorsk and Halilovo (with chrome and nickel) in the south; near Sverdlovsk and Bogoslav in the north. Copper is

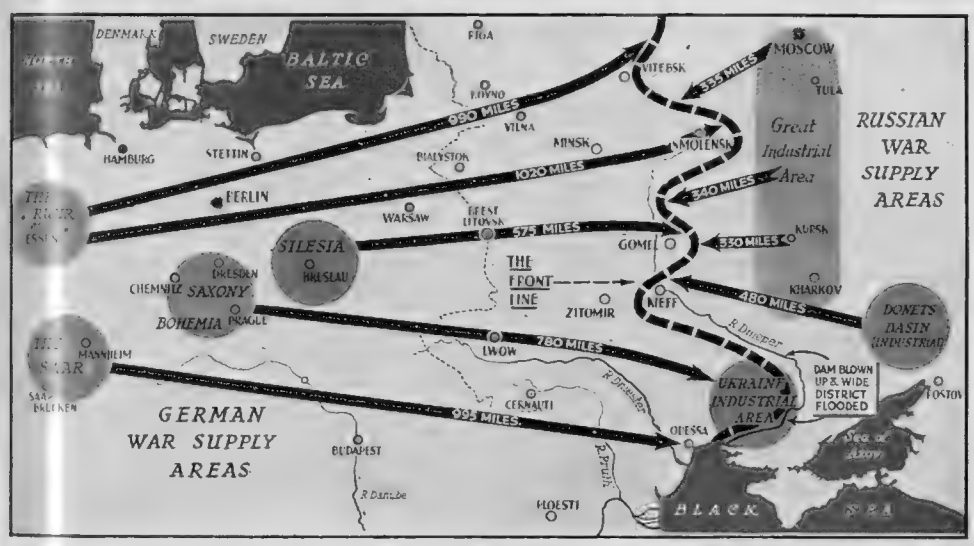


THE VAST RESOURCES OF THE URAL MOUNTAINS, which form a second industrial zone for the equipping and supplying of Russia's armies: The principal industrial regions of Russia have hitherto been confined within a broad zone roughly stretching from Moscow down to the Black Sea, and within the Donetz Basin—as indicated in the drawing *on the left*. But, for many years past, another rich industrial area has been in course of exploitation: this is in the Urals, to which, it is safe to say, the Germans will never penetrate. It forms a second industrial "defence line": what its products and resources are is described in the accompanying article

and giving them rail access to Moscow and Russian Europe, and to Russian Asia and the new towns springing up there. No sacrifice was too great, it seemed, to bring about the conversion of an agricultural country into a powerful modern industrial State.

Sverdlovsk (formerly Ekaterinburg) is still the largest town in the Urals, with a population of 426,000. It specialises in engineering and car construction—the Uralmash works have an enormous output. The rolled steel comes from the huge metallurgical plant at the new town of Nijni Tagil (population 160,000), a hundred miles to the north.

Chelyabinsk, another "old" town, has over 273,000 people—its population has more than doubled since 1926. It specialises in agricultural machinery: tens of thousands of tractors are made yearly. Magnitogorsk, at the foot of the brown Magnet Mountain, 65 per cent. of which is iron, did not exist in 1930. To-day it is a bustling industrial centre of over 146,000 inhabitants, with one of the busiest iron and steel plants in the U.S.S.R.



GERMANY'S LENGTHENING SUPPLY LINES IN THE RUSSIAN CAMPAIGN: As the German armies thrust deeper and deeper into Russia, so they are getting farther and farther from their supply bases in Silesia, Bohemia, the Saar and the Ruhr. This diagram shows the front line in its relation to the bases and the distances involved in each case

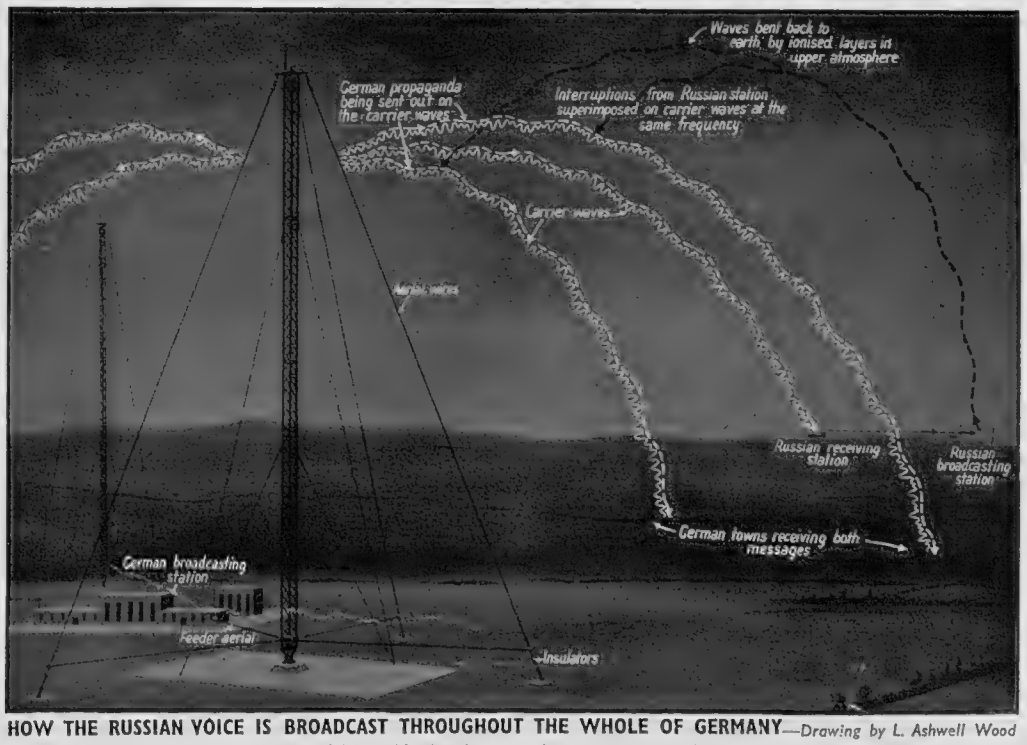
mined chiefly at Degtyarka, south of Sverdlovsk and in the Bashkirian A.S.S.R. south-west of Magnitogorsk; a great new copper refinery was opened in 1940 at Revda, near Sverdlovsk. Nickel supplies come from the region of Chelyabinsk and from Orsk, on the Upper Ural River; manganese from the region of Magnitogorsk; and chrome from Orsk. Large deposits of potash occur near Solikamsk in the north; gold is got in several places, notably near Degtyarka and Chelyabinsk. Ural coal is mainly in the Kizel region.

Oil comes mainly from the oil-bearing regions between the Urals and the Caspian. The oilfields within the Ural region itself are at Ishimbaevo (in the Bashkir A.S.S.R.), whence a pipeline runs to Ufa, on the main Moscow-Chelyabinsk railway; and near Perm, whence crude oil goes to Saratov for refining.

Electricity is supplied by many large power-stations, which in 1937 provided at least 12 per cent. of U.S.S.R. output. The great Chelyabinsk and Magnitogorsk stations supply current for monster circuits, and in the northern Urals, amid ash and conifer forests, tower the chimneys of the Berezniak and Kizel powerhouses. In the south are the stations of Orsk and Sterlitamak. Electric power runs mills and factories and several Ural railway sections.

There is abundant timber. The Urals, which are neither a physical nor a climatic barrier between the U.S.S.R. in Europe and the U.S.S.R. in Asia, have on both sides of them the rich steppe that is the best grain land in the world, and the pasture-land from which dairy produce, meat and other food supplies come.

Amazingly rich in mineral and other resources, the Ural region needed only labour under skilled direction to transform it from the primitive mining and farming country of 1914 to the busy industrial region of to-day. The scanty railway system, which in 1914 ran transversely across the Urals from Europe into Asia, was supplemented by longitudinal railways from north to south, linking all the industrial centres together



HOW THE RUSSIAN VOICE IS BROADCAST THROUGHOUT THE WHOLE OF GERMANY—*Drawing by L. Ashwell Wood*

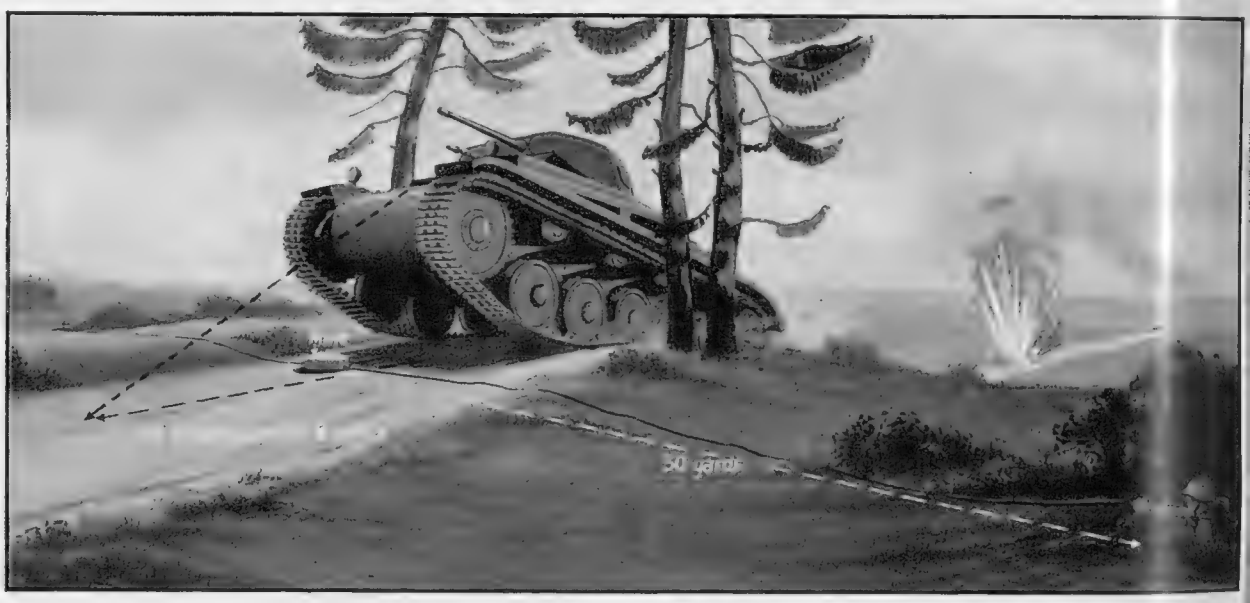
Germany's great transmitting station of Deutschlandsender has become a joke throughout the world, owing to the greater technical efficiency of Russian wireless engineers. All wireless messages are sent out on a modulated "carrier" wave: the wave-length and frequency being known to the Russians, they simply superimpose their interruptions on the same wave, at the same time listening in to the German broadcast and butting in when they like. This is done through a very powerful transmitter—one of the most powerful in the world, if not the most powerful—at Moscow. For weeks now the Voice has been making pungent comments on the "news" as interpreted by Deutschlandsender

HOW THE TANKS WAGE WARFARE IN RUSSIA

Drawing by W. G. Whitaker

TANKS ON FIRE AFTER A CONFLICT ON A RUSSIAN ROADWAY : The turret cap of one has been blown completely off : In the background two or three tanks have caught fire and are still burning. A deep ditch runs alongside the road—into this one of the burning tanks has run, and a third tank has completely collapsed into it. In the foreground a medium tank of fairly heavy build has had its turret cap completely blown off sideways. The supporting carrier wheels for the track have also vanished

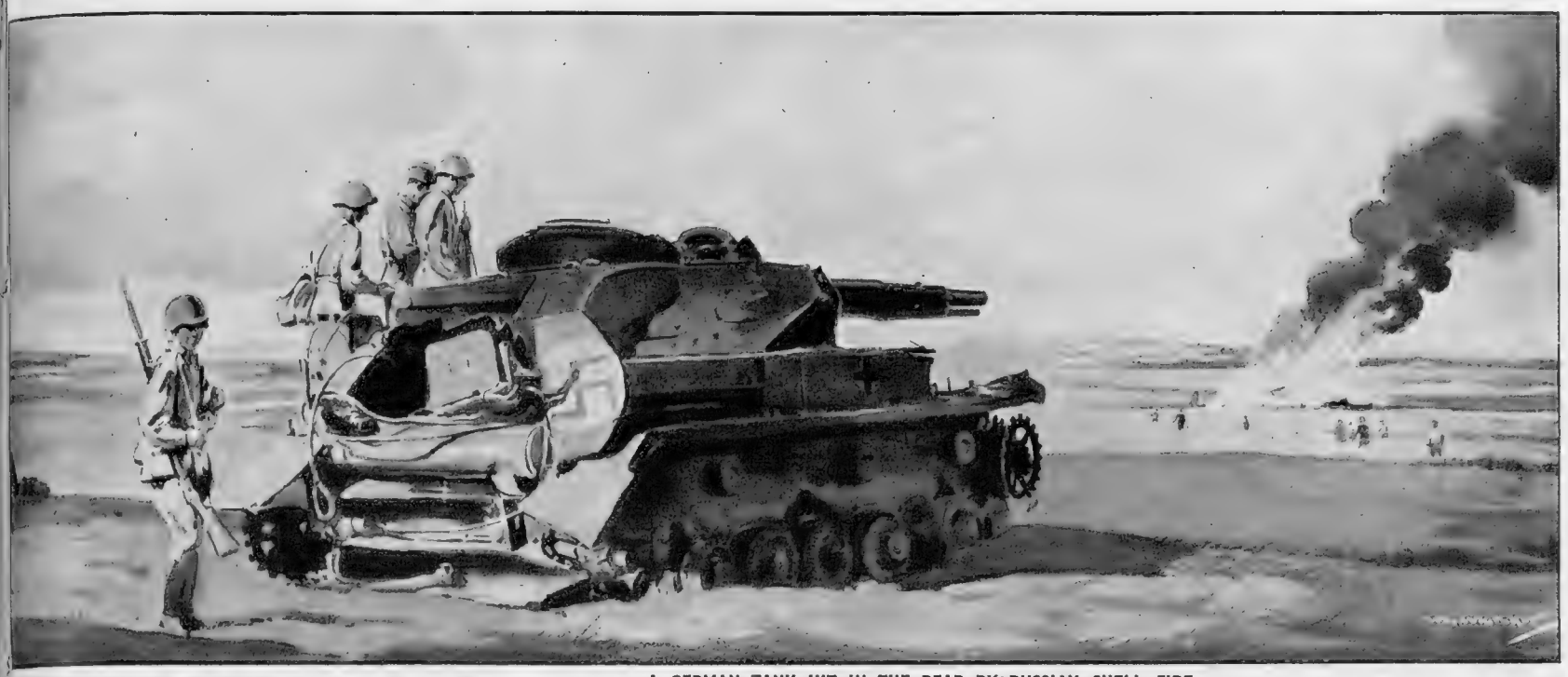
"Seventy tanks were put out of action"—the phrase occurs in a communiqué of some days ago. It is a modest number compared with the description of some tank conflicts in the Russo-German battle area. The official communiqué leaves it at that—the tanks were put out of action We endeavour to give the reader as much assistance as is possible at the moment in showing how this has been achieved. A certain number of photographs of damaged tanks are reaching this office from time to time. Here are some of them, together with drawings made from photographic material. They show that tanks evidently suffer from severe gunnery attack, which knocks their turrets completely off—in several cases this whole unit has been lifted clear from its circular fitting. It would look as if a vulnerable spot had been found. In another case the rear part of the tank cabin has been smashed in and wings damaged. The gun turret remained in place. In other pictures there is clear evidence of the breaking of the caterpillar tracks, strong as they appear to be in some cases. In some instances this would occur through sheer mechanical strain, but the tracks must always be desirable targets for anti-tank gunners



A RUSSIAN BOOBY-TRAP FOR PASSING TANKS—*Drawing by L. Ashwell Wood*
Among the many devices which the Russians have used against tanks at close quarters is a simple but effective road mine. This can remain concealed at the side of a road and can be drawn into the pathway of an oncoming tank by a cable. This can be operated by one or two men, as the case may be. The above diagram shows that the close-up range of visibility of the tank crew is generally very hampered

A HEAVY TYPE OF TANK, with big turret, stranded on a railway track : This huge Russian tank came to the end of its usefulness at the side of a road, along which runs a railway track. The left-hand track of the tank is actually resting on the sleepers, as can be seen on the left-hand side of the picture. The tank track is unusually broad and strongly built, but the outer portion of the travelling band is broken, possibly by mechanical defect, for the body of the tank shows no evidence of shellfire, although some detached pieces of metal are lying on the rear roof

GERMAN TANKS, which have been badly "strafed" by the Russians : In this picture, wirelessed from Moscow, two German tanks have been wrecked. They lie on the further side of the road, while in the foreground a battered turret gives evidence of the fierceness of the conflict. The turret appears to have come from the rear tank in the background



A GERMAN TANK HIT IN THE REAR BY RUSSIAN SHELL FIRE—*Drawing by W. G. Whitaker*

This tank was evidently put out of action in a very different manner to those shown elsewhere on these pages. The turret cap is in position, but the rearward part of the tank cabin has been smashed. It may have been caught thus in a mêlée or in a barrage laid down by the Russian artillery. Both the tanks' tracks have been crushed out of sight

LIGHT GERMAN TANK MOVING ALONG A RUSSIAN ROADWAY : Although the tank track is carried on a double row of support wheels with twelve runner wheels below, it does not appear to be very strongly built. The gun turret is light in build and the track wing looks clumsy

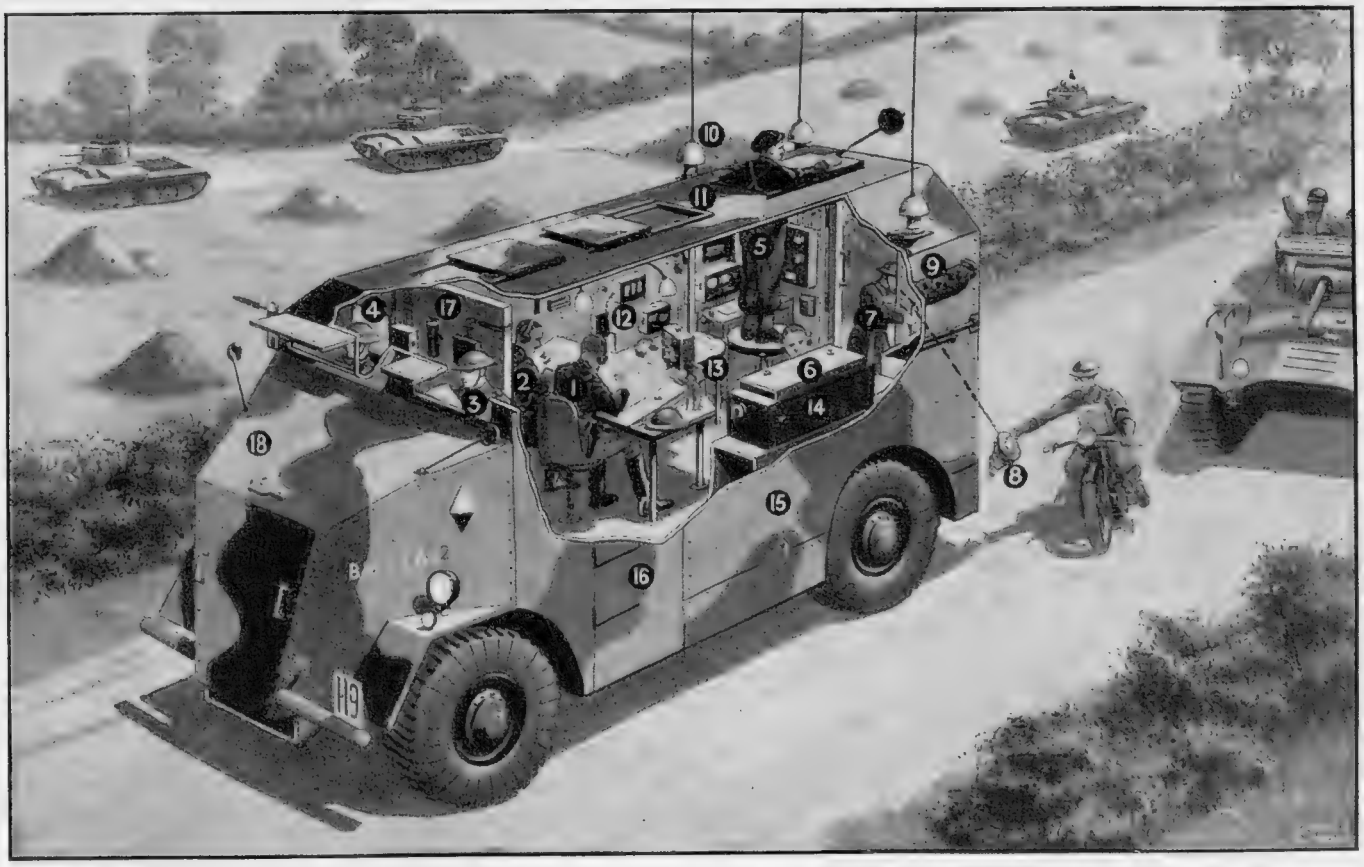
TANKS IN COMBAT—A case of ramming and crushing of one tank by another : The heavier Russian tank is stated to have put out of action three enemy tanks by pressure tactics and not by gunfire. The Russian tank on the right has a track outline reminiscent of 1918, whereas the lighter German tank, which still carries its wireless mast erect, is propelled—or rather, was propelled—on a shallow caterpillar base. The wings of the Russian tank appear to have been crushed, but the turret, which carries quite a long-barrelled gun, appears to be intact

Everything is now upon wheels, and "Headquarters" are no exception. Here is a diagrammatic view of one of the fast-moving Command H.Q. of a tank division. These bullet-proof vehicles are pleasantly known as Dorchesters, and can house a crew of seven. They can keep up with the tanks and direct all operations by wireless and radio telephone. Here is a key to the crew :

1. Brigadier.
2. Brigade Major.
3. Intelligence Officer.
4. Driver.
5. Signals Officer.
6. Wireless operator.
7. Radio telephone operator

Here follows a key to the various parts which have been numbered :

8. Net for receiving despatches
9. Camouflage net.
10. Wireless aerials.
11. Observation hatches.
12. Wireless and telephone apparatus.
13. Brigadier's telephone.
14. Wireless.
15. Armoured sides.
16. Entrance door.
17. Back of route map.
18. Armoured protection for engine



A BRITISH TYPE OF ARMOURED VEHICLE USED FOR H.Q. : A travelling Command Headquarters of a tank division, known as a Dorchester. These fast-moving vehicles carry a crew of seven ; they keep up with tanks ; and orders are transmitted by the Commander by means of wireless and radio-telephony—*Drawing by L. Ashwell Wood* (See notes at left)

Armies in ESTONIA

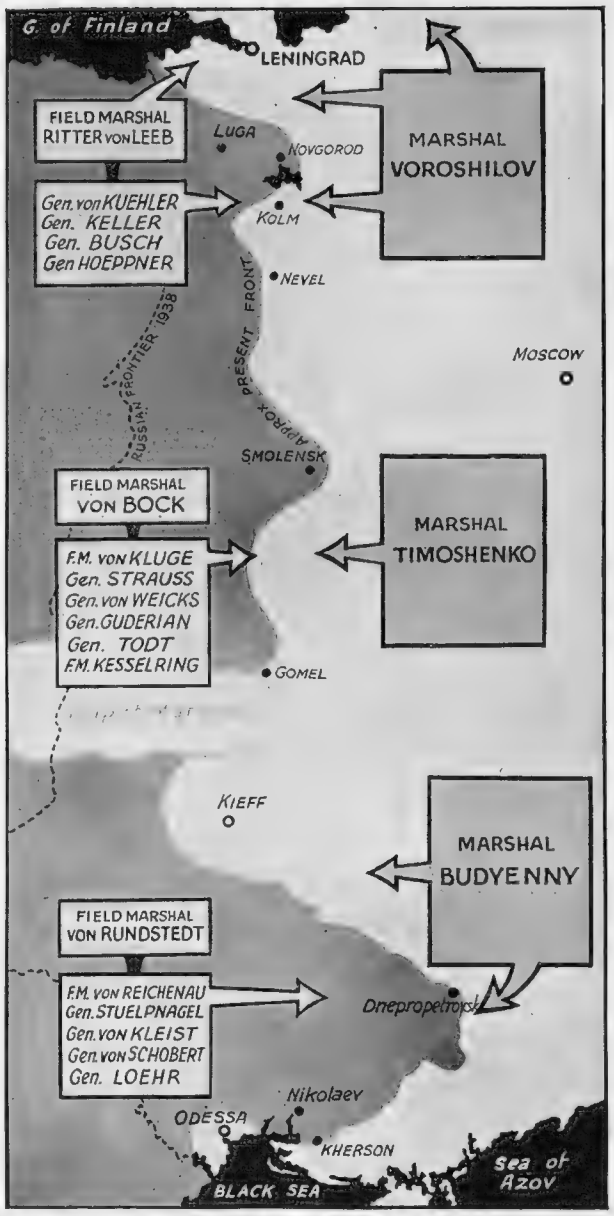
Field-Marshal Ritter von Leeb.—A Bavarian. Ennobled during last war. Placed on retired list in 1938. Recalled, September 1939. Commanded 30 divisions in Holland.
General Kuehler.—Commands army in Estonia.
General Keller.—Commands air force in Estonia.
General Busch.—Commanded army fighting round Lake Peipus.
General Hoeppner.—Commands tank forces fighting with Busch's army.

In the CENTRE

Field-Marshal von Bock.—Sixty-one years old. In France 1940 commanded army holding Somme-Aisne line.
Field-Marshal von Kluge.—Serves under von Bock.
General Strauss.—Commands army under von Bock.
General von Weicks.—Also under von Bock.
Tank forces under General Guderian and General Todt.
Air force under Marshal Kesselring.

In the UKRAINE

Field-Marshal von Rundstedt.—He is sixty years old. Had been retired, but returned to active service at the opening of war. Said to keep himself well before Hitler's eye. He is a Prussian. Commanded an army against Poland in 1939, and was in command of 50 divisions in France in 1940. He commands in the Ukraine about 100 German and allied divisions, including some six panzer divisions and an air force.
Field-Marshal von Reichenau.—Under von Rundstedt at Jitomir.
General Stuelpnagel.—Fought fierce battles in the Jitomir area.
General von Kleist.—Commands tank forces in the Ukraine.
General Ritter von Schobert.—Commands army which advanced across the River Dniester.
General Loehr.—Air force commander in the Ukraine.



THE GERMAN COMMANDERS IN THE FIELD, and the areas in which they are operating

THE BATTLE OF THE DIVISIONS

The Possible Strength of the German and Soviet Armies as They Fight at Present

By DONALD COWIE

THE most important question for the world at the moment is whether Russia or Germany will prevail in the campaign on the Eastern Front. But any discussion of this question is useless without some knowledge of the numbers and state of the forces engaged on either side. How many first-line divisions have the Russians and Germans left to-day?

No one can give a definite answer to that, not even the protagonists themselves. Yet we can analyse what information is at our disposal, and then allow our common sense to do the rest. First, however, it is necessary to be clear about what exactly constitutes a "division" in modern military parlance. Originally, armies fought as single units, made up of many regiments banded together on one battlefront. But the increasing size and complexity of armies as a result of Napoleon's introduction of what we now call "total war," made it impossible for generals to control them efficiently as single units. It was decided to split them into several self-contained "divisions," each capable of operating entirely on its own.

Until recent times the division generally consisted of some 20,000 men, although numbers varied according to national circumstances. Thus a very small country, for the sake of prestige, might "cook" its military figures to a certain extent, and form divisions of considerably fewer numbers than those of greater Powers. On the other hand, countries of large populations, such as Russia, could always keep their units up to full establishment. Then came mechanisation, and the number of men in a division everywhere went down with a bang.

This was because formations would need to be still more compact and self-contained under the new mobile conditions, and also because machines would be taking over much of the work formerly done by soldiers. One Bren-gunner should be able to fulfil the functions of at least fifty riflemen; mechanical transport would enable a few hundred soldiers to encircle an area that would previously have required many thousands to subdue. So the Powers reduced the strength of the soldiery in their divisions, while automatically increasing the number of the divisions themselves. The extent of the reduction was governed by the degree of mechanisation attained.

Thus we were working just before this war on a basis of some 15,000 men to a division. But the Germans, completely mechanised in the front line, announced semi-officially that their divisions consisted of only about 12,000 men each. While we cannot be certain of the Russian figures, it should be noted that whereas the Soviet Army formerly had large divisions, mainly infantry, the reforms of M. Stalin in 1933—when he decreed such a measure of mechanisation as no army had ever known before—must undoubtedly have decreased the number of men per unit. Yet it is probably the case that the Soviet divisions at war to-day are larger formations than those of the Germans.

The armoured division proper is, of course, another matter. When we speak of an army as being completely mechanised, we do not (as yet) mean that it consists entirely of "panzers." Even the Germans still have a comparatively small number of panzer divisions. The individual strength of these is assessed in terms of tanks rather than men. Thus a German panzer division consists of some 500 tanks, which may carry about 2,000 men as crews; and another 2,000 men would accompany the division for the purpose of providing ancillary services. The German "baby" panzers, or "rapid" divisions, consist of some 250 light tanks, with a correspondingly smaller number of men. Now we come to the crux of the matter.

On the outbreak of the Russo-German War, from 140 to 160 Soviet divisions were mobilised and travelled to meet the enemy. The strength of the German attacking army was then computed at about 120 divisions, with a few Rumanian divisions. Therefore, it could be said that about 1,800,000 Russians and 1,200,000 Germans were soon fighting

GENERAL VON RUNDSTEDT, Commander of the German Army in the Ukraine. It was reported a few days ago that this German General had been murdered by one of his own officers

THE SOVIET AIR CHIEF, SMUSHKEVITCH, who is working in co-operation with Sir Richard Pierse, of the Bomber Command, R.A.F., in the attacks on Berlin and other parts of Germany. Each air force is informed of the other's plans many hours before the actual operations

THE GERMAN THRUST INTO THE DNIEPER ELBOW, forming a salient at the end of the battle zone

The break-through of the German forces in a south-easterly direction from Uman in middle August brought the enemy forces as far east as Dniepropetrovsk, the big industrial city on the east bank of the Dnieper River. At the same time Nikopol was claimed by the Germans, and a little later they claimed the capture of Borislaff, to the north-east of Kherson. At several points along the Dnieper, fiercely-contested struggles for bridgeheads continued, the Russians attempting to recapture positions by boat attack in the higher reaches and small naval craft in the lower. General von Kleist's panzer force was naturally slowed up in its advance by the broad stream of the great river and by the flooded area—due to the closing of the big dam sluices in the first case, and the breaking of the dam itself in the second

HITLER REJECTS THE FINNS' PLEA FOR A SEPARATE PEACE : This picture comes from a neutral source. It purports to show a "secret meeting" between Hitler and the Finnish General Harald Oehquvist, of the Finnish High Command, at the Führer's headquarters at Koenigsberg. On the left is General Keitel, and on the right is von Ribbentrop. Reports state that the General travelled on an urgent mission to secure from Hitler permission to make a separate peace with Russia. The plea, it is stated, was angrily rejected

each other along that fantastically protracted front. These figures are arrived at by deducting some 20 German divisions as panzers, and some 30 Russian divisions, then by taking the other German units to contain 12,000 men each and the Russian 15,000 each. Now, what about losses in the last nine to ten weeks?

It is quite impossible to arrive at any satisfactory estimate. Both sides would be foolish to publicise the real figures. We can deduce from repeated statements in Moscow and Berlin, however, that casualties have been extremely heavy. They should, of course, be heaviest on the German side, for attackers usually suffer the most. But, on the other hand, the Russians have fought with a fury and disregard for loss quite unequalled in the history of modern war. Therefore, it is a reasonable deduction that casualties have been suffered in about equal proportions on either side. But, since the Russians started with that initial numerical advantage, they should still have a larger army in being.

Two important points must now be examined: first, the reserves on either side. Germany has not sent all her first-line troops to Russia. She keeps many in strategic reserve, garrisoned in the Low Countries and south-west France, for possible descents upon Britain or Spain, or to repel British attacks from those quarters. Probably she has 800,000 men so engaged—and those, with the forces in Russia, complete her 2,000,000 first-line army. The rest of her 6,000,000 soldiers—the 4,000,000 who are still partly-trained or are unsuitable for the front line—will be found distributed cannily among the occupied countries and the Reich itself. So Germany has not very big reserves to call upon for her Russian campaign. She would be seriously open to attack from the west if she withdrew the French garrisons; those 4,000,000 second-, third- and fourth-line troops would certainly not be much use in the Russian winter. On the other hand, Russia has a reserve of 16,000,000 men (about equivalent in quality to the German 4,000,000). Whether she could mobilise and equip them is problematical. Still, even on the "reserve front," Russia continues to have a numerical advantage over her enemy.

But the second important point has rather more serious implications. We return to the matter of the divisions. It has been shown how these have been developed as self-contained military units. That is why we count armies in terms of them. And it is unfortunately a fact that when a division is defeated and broken up in battle it is, virtually, "annihilated." Most of the men may still be there, but the organisation has been smashed and the men are fit henceforth only for the internment camp or guerilla warfare. The German strategy against Russia has been to effect such a disintegration.

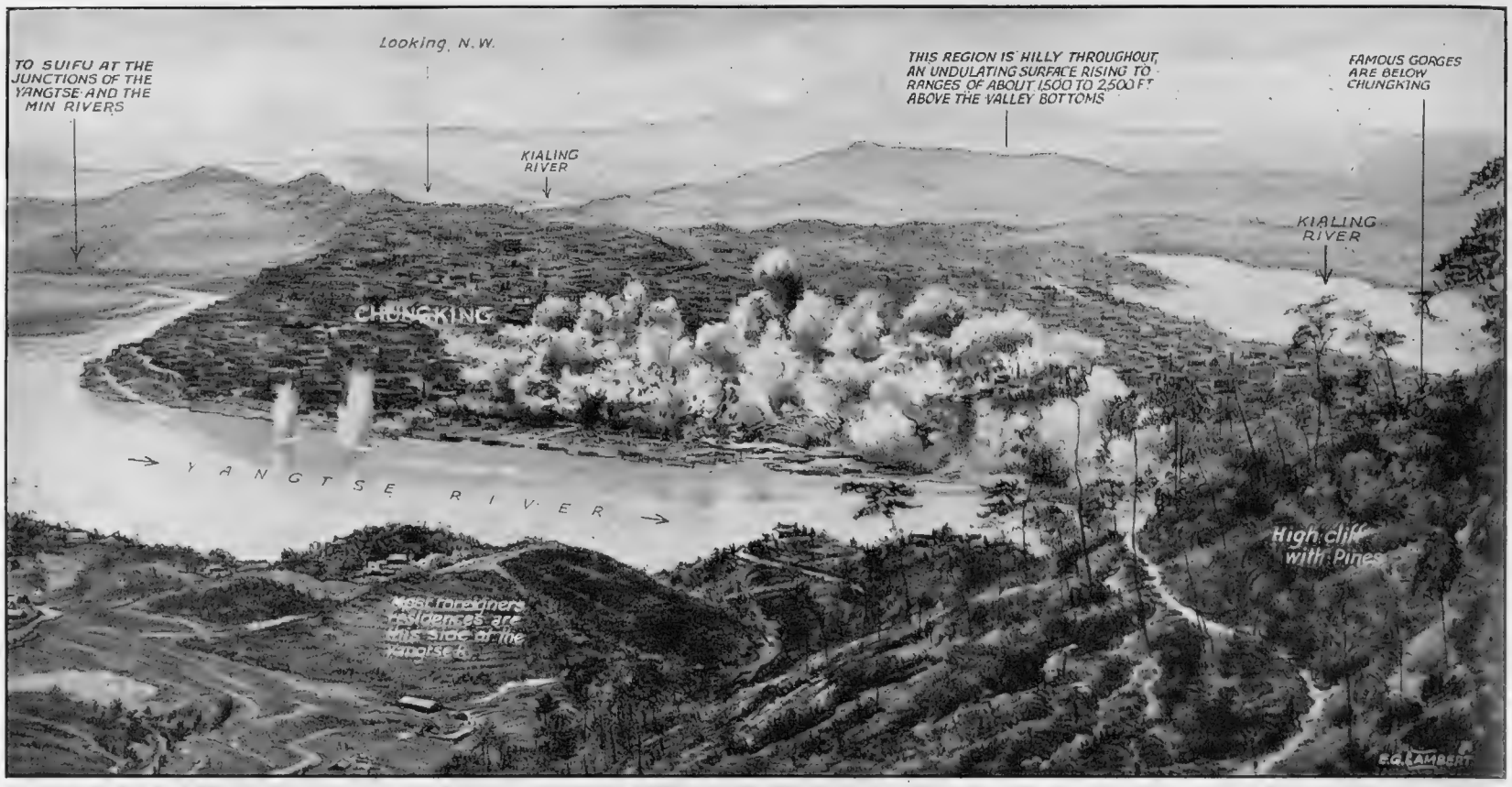
Always retaining the strategic initiative, as attackers must until they are fought finally to a complete standstill, the Germans have adopted the method of concentrating their weight in turn against what they consider are weaknesses in the Russian defensive scheme, and in this way they have often obtained the advantage of local numerical superiority.

So much will depend upon the ability of our allies henceforth to keep their divisions intact before what must become an increasingly feeble German offensive. Perhaps at the moment about an equal number of completely efficient first-line divisions are engaged on either side—say 60 German and 60 Russian. Others will be refitting at the rear, where the Russians now have the advantage, since their guerillas must be making German refitting operations anything but a rest-cure. Then King Winter will soon be having his say. Indeed, the Russians should, on the paper-showing of rough statistics, have a magnificent chance of something very like victory.

HOW RUSSIA GETS ITS WAR NEWS AT FIRST HAND : A well-known Soviet journalist and war correspondent, B. Palin, is here seen (second from right on the ground) at the interrogation of a German prisoner of war. The interrogation took place on the actual field of battle shortly after the capture of the German

THE RUSSIANS FIND AN EFFECTIVE COUNTER TO THE GERMAN DIVE-BOMBER—*Drawing (from photographic material) by Roland Davies*

The German dive-bomber—so overwhelmingly effective in other campaigns—has not proved quite so effective in the present fighting in Russia. This is partly due to the fact that the battle-front is so vast that strong but temporary concentrations at one point are no longer possible—squadrons of dive-bombing aircraft cannot be switched about at will, especially when the "line" is so fluid! But there is another reason. The Russians have discovered that one very effective defence is the multiple A.-A. gun, or pom-pom. These are pivoted so that they can be swung in any direction and at great speed—very much like the pom-poms of the British Navy. By this means, a dive-bomber can be followed, and at the right moment it is blown to pieces as it pulls out of its dive. Working with the lighter guns is the larger type shown on the right. This has a working crew of five



CHUNGKING, ON THE YANGTZE RIVER, bombarded by the Japanese without cease—*Drawing by E. G Lambert*

On occasion, the Japs have dropped as much as 100 tons of bombs at a time on the Chinese Nationalist Headquarters. And these bombing raids have been carried out for months and months now. Out of a population of half a million, nearly half are homeless as a result. The drawing above gives an impression of a bombing raid in progress. In the foreground is the south-east side of the river : it is here that most of the foreigners in Chungking have their residences. Their offices, however, are on the other, or north-west, side

WHAT THE JAPS HAVE DONE TO CHUNGKING

"LITERALLY, the sky is the only roof over the heads of 60 per cent. of Chungking's half-million population." So wrote a correspondent from Free China's war capital after Japanese bombers had reaped their summer's harvest of destruction in 1940.

But the Chinese are a hard-working people, and when the spring of 1941 lifted winter's fog from over Chungking, it revealed hundreds of new houses, new shops, and new office buildings ; indeed, whole new streets. These, in their turn, have now been bombed and burnt to dust and ashes. For Japan's airmen have been reaping again their crop while the sun shines on Chungking.

This city, to which General Chiang Kai-shek moved his Government after the fall of Hankow, is a prong of rock caught in the angle between two rivers—the mighty, muddy Yangtze, and its green tributary, the Kialing, which is affectionately called the Little River by the people of Chungking. Half-encircled by rivers and beyond the rivers by mountain ranges, Chungking, though itself built on a steep rock, lies enclosed as within a bowl, open only to the sky. And for eight months of every year thick fog, like a lid, covers the bowl, shutting out sky, sunshine and moonlight. During autumn and winter the streets and roofs of Chungking seem always to be wet ; the 446 wide, worn steps leading up to the city from the river bank are slimy with rain.

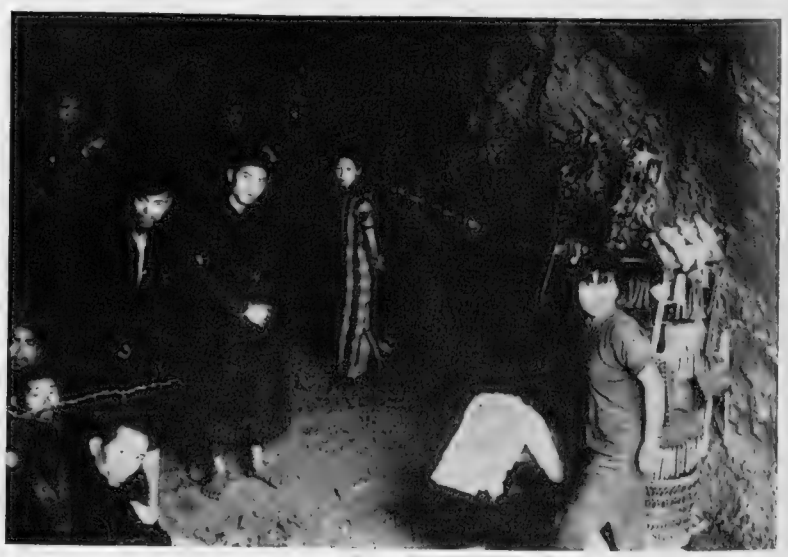
Formerly this continual state of moisture was a cause of grumbling in Chungking. More than most people, the citizens of that city looked forward to spring, when the lid of fog would lift to let in the sun and unveil the distant mountain peaks. But for three years now the sight of the sun has synchronised with the drone of enemy planes, the whine of bombs, the terrible impact of explosives on rock. The price of a little fine weather each year has been the death of tens of thousands of people and a hunted life for those who survived, huddled in caves while their homes and business fell to dust and burnt to ashes. In 1939, when the fog lifted late in April, 5,000 people were killed by Japanese bombs on May 3 and 4. This year's heavy bombing did not start until June. In 1939 the last severe raids of the season took place in mid-August ; in 1940, in mid-October. Safety depends on fog.

Japan's adventure in the Southern Pacific has not lightened Chungking's ordeal. Recently there have been whole weeks when wave after wave of Japanese bombers, by sunshine and by moonlight, have kept the people of Chungking underground, sometimes for twelve hours at a time. Casualties have been fewer than in former years because the city has been cleared of tens of thousands of people and its rebuilt streets have been separated by fire lanes, while numberless shelters have been dug and blasted in the rock on which the city stands.

F. E. Dean

JAPANESE BOMBERS NEAR CHUNGKING : To reach the Chinese Nationalist capital, the bombers have to cross the rugged mountains of Szechuan Province. In the future, also, they may have to contend with a reborn Chinese Air Force !

REFUGEES FROM CHUNGKING, after a Japanese assault by air, stream out to the countryside from a bombed and burnt-out area

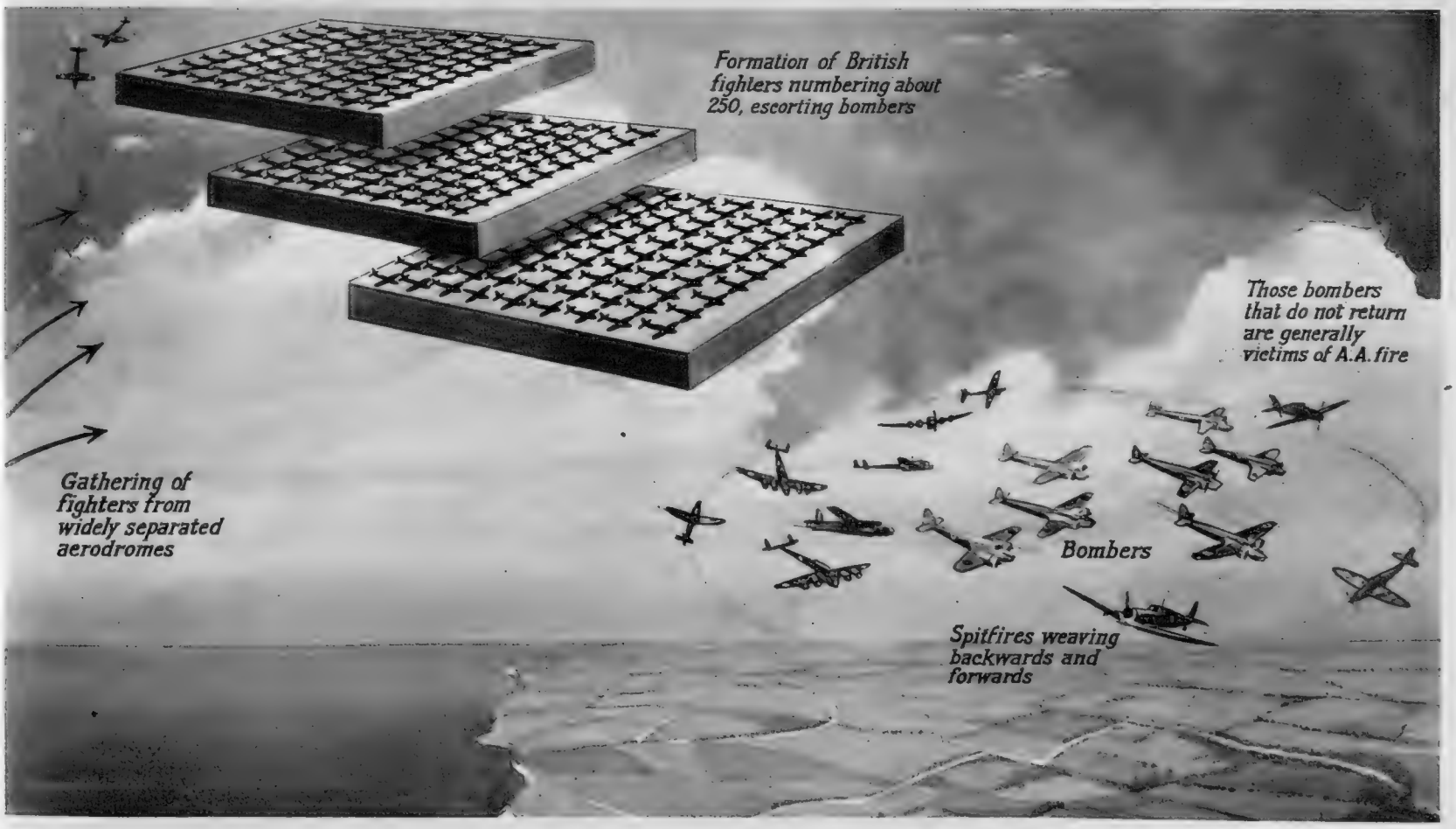


CHINESE SHELTERING IN A DUG-OUT DURING A JAPANESE RAID : All round the city caves have been dug into the hillsides, and here the Chinese take refuge Were it not for these dug-outs the casualties would have been far higher. As soon as the warning is given the inhabitants troop out to their impregnable shelters

THE BOMBING of the CITY of COLOGNE

THE CITY OF COLOGNE, TARGET OF SOME OF THE R.A.F.'S HEAVIEST ATTACKS—*Drawing by Sydney R. Jones*

Cologne is the commercial centre of the Rhineland ; its importance to the German economic system cannot be over-emphasised. This is the city which the R.A.F. have made their target for operations by day and by night ; and their bombing raids on the city itself and the surrounding industrial regions must have caused incredible havoc. For not only is Cologne a great commercial city, but it is a key point in Germany's transport system. The drawing by Mr. Jones above shows the whole layout of the city, starting with the big railway bridge across the Rhine in the foreground ; the main architectural feature is, of course, the great Dom, or cathedral, near the railway station. This is surrounded by the main business sections and shopping centres ; stretching away into the country are the manufacturing suburbs, power-stations and other centres which have been of such particular interest to the R.A.F.



HOW ONE R.A.F. ATTACK ON GERMANY WAS CARRIED OUT, with large formations of fighters escorting the British bombers—*Drawing by H. P. Burton*

There are now no half-hearted measures when the R.A.F. carry out an attack on Germany. To-day our bombers are often escorted by very large formations of fighters ! Here is how a flight commander has described the scene depicted above : "Looking down from the highest tier in the formation," he said, "the whole sky seems full of friendly Spitfires weaving backwards and forwards. It is a most comfortable feeling. The Nazis' morale must be incredibly low. They will not attempt an attack on the main body of our formation, but always wait their opportunity to pick off stragglers. I have never seen German fighters get anywhere near our escorted day bombers. Those day bombers we have lost were generally victims of anti-aircraft fire." A fighter sweep over occupied territory lasts about an hour and a half ; and much of the time is spent assembling at the rendezvous. The whole operation of bringing together such a great number of machines from widely separated aerodromes is a masterpiece of organisation and precise timing

THE CENTRE OF THE IRANIAN OIL INDUSTRY AT ABADAN : This is one of the points at which British troops were landed in Iran. It lies on the Persian Gulf 35 miles to the south-east of Basra. It is here that the Anglo-Iranian Oil Company's refineries and storage installations are located; these handle the bulk of Iran's oil production of around 10,000,000 tons per annum

The BRITISH and RUSSIAN ENTRY into IRAN

The Railways and Roads of the Country

Described by W. ROBERT FORAN

THE Russo-British advance into Iran has averted a serious Nazi *coup d'état* in that country. Strategical advantages of great value to Russia and Britain will accrue by establishing wartime control over that part of Iran situated between Iraq, Turkey, Soviet Transcaucasia and the Caspian Sea. The Russo-British occupation of Iran will safeguard the vital oil-bearing areas, the great oil refineries, and the oil pipe-line through Iran, Iraq and Syria. It will achieve even more than this.

A natural corollary of the temporary occupation of Iran will be to give control of the recently completed Trans-Iranian Railway, which connects Bandar Shapur at the head of the Persian Gulf with Bandar Shah on the Caspian Sea. This may be vitally important to both Russia and Britain. It will make possible the shipment of large quantities of war material from the British Empire or the United States, at all seasons of the year, to ports at the head of the Persian Gulf; and the sea route will be far safer than any of the others available. The goods carried to the head of the Persian Gulf can then be transported through Iran on the railway to the Caspian Sea port of Bandar Shah. From there they can be shipped in safety to any of the Russian ports on the Caspian Sea.

THIS IS THE MACHINERY WHICH BRITAIN AND RUSSIA DETERMINED TO PROTECT : The refineries at Abadan on the Persian Gulf, whence oil is shipped to Britain and elsewhere

IRAN AND ITS SINGLE RAILWAY SYSTEM which runs across the country from north to south : Despite the immensity of Iran—an area of over 600,000 square miles—there is only one railway system : but this is of very great strategic importance, linking up, as it does, Russia with the Persian Gulf. The railway runs from Bandar Shapur in the south to Bandar Shah in the north : it cost £30,000,000 to build and was paid for out of Iran's tea and sugar monopoly. By the Russo-British occupation of the country, this railway is now safe from interference by Nazi agents

Krasnovodsk in Turkestan is north of Bandar Shah, and from there direct railway communication is offered to the Far East and the Soviet's eastern army; or from the railway junction at Tashkent there is direct rail communication with Moscow through Orenburg. On the west shore of the Caspian Sea there are the Soviet ports of Baku, with direct railway to Batum on the Black Sea, and Petrovsk (north of Baku), with direct railway to Rostoff and Odessa on the Black Sea. At the extreme north of the Caspian Sea is the Soviet port of Astrakhan, which is connected by railway with Moscow.

The Trans-Iranian Railway is now destined to play a most important role in the defence of the Middle East against Nazi aggression. Its strategic value, perhaps, was not widely appreciated at the time of construction.

It was not until Reza Shah Pahlevi had deposed the absent Shah of Persia and ascended the throne in 1925 that the country's urgent need for railway communications was met in a courageous manner. Under the new ruler a start was soon made with the construction of a railway to connect the head waters of the Persian Gulf with the shores of the Caspian Sea. Some idea of the boldness and immensity of this undertaking can be gleaned by a consideration of certain facts. Iran's area is about 628,000 square miles and the population

A YOUNG IRANIAN WOMAN OF TEHERAN : Dressed in the European style, which is the modern custom in the capital

is estimated at 15,000,000; but the country and its people have shunned the modern inventions and comforts of Western civilisation, thus new-fangled ideas such as railways met with strong opposition.

All the available labour in Iran was completely inexperienced; two great mountain ranges had to be traversed—the Luristan and Elburz; the country in the south is subject to severe flooding in the spring months; and two new ports had to be created, one on the Persian Gulf and the other on the Caspian Sea, on sites which were no more than barren wastes.

The enterprise cost £30,000,000 to complete. The northern and southern sections of the railway were put in hand simultaneously. On the last-mentioned section, however, innumerable bridges and culverts had to be built in order to deal effectually with the flooding of the countryside in Khuzistan during the spring season. No ballast was available locally. It all had to be collected near the Indian frontier, then shipped up the Persian Gulf and delivered at the new port at Bandar Shapur—then also in process of construction. At Bandar Shapur more than 120,000 square metres of land were reclaimed from the sea and rendered fit for human habitation; then permanent buildings were erected thereon; and a pier was built to accommodate ocean-going vessels for loading or discharging cargo. There is a deep-water anchorage available at Bandar Shapur.

"GOD HAS WILLED IT LIKE THAT": That is the English equivalent for Yezdikhast, a picturesque Iranian village to the south of Isfahan, in the very centre of the country: it is situated at a small river, 6,760 ft. high, and overlooks the fertile fields like a proud fortress on a steep hill. Scenery and road are typical of this central part of Iran

ONE OF THE GREAT ROADS THROUGH IRAN: This is the great Western Road, a new highway which runs from the capital of Teheran to Bagdad in the south and to Tabriz in the north. As there is only one main railway system in Iran, the roads have a great commercial and strategic value. The present Shah has built many of them

Ahwaz is a large town situated about 70 miles from the port at Bandar Shapur. It is also the capital of the Khuzistan Province. Here were located the principal railway activities of the southern section. The Shah also founded a new town, with wide streets and modern dwellings, on the right bank of the Karun River. There is an air of prosperity and progress perceptible in Ahwaz, which is important industrially and also situated conveniently to the south-west of the great oil wells at Masjid-i-Sulaiman and Haft Kel. These are only 50 miles distant from Ahwaz.

Iran is one of the prominent oil-producing countries of the world. The industry there is British-owned and financed, but pays valuable royalties to Iran from the Anglo-Iranian oil properties. These royalties represent approximately a third of Iran's total revenues. Much of the output of petroleum from the Anglo-Iranian oilfields is used by Britain's mechanised Army and the Royal Navy. The refinery is situated at Abadan on the Shatt-el-Arab, which is formed by the confluence of the Tigris and Euphrates Rivers of Iraq; and Abadan itself is set on the edge of the low, sun-baked plains that run down to the Persian Gulf. Every month scores of tankers leave the wharves there with the oil won near Ahwaz and refined at Abadan.

STREET SCENE IN THE IRANIAN CAPITAL: A few years ago, these women never left the harem, and the men walked about in slippers and turbans. To-day, Iran has followed Turkey in modernising and Europeanising social life

THE CAPITAL OF IRAN—a surprising view of the city of Teheran: The capital stands in the midst of a fertile plain; it replaced Isfahan as the centre of government in the eighteenth century. The city is bounded by bastioned walls, and covers an area of 7½ miles. Within the mass of native architecture seen here are a number of modern buildings constructed within the past few years

When travelling on the Trans-Iranian Railway, naturally enough, one hears a great deal about this vast oil industry. It is the chief topic of conversation in and around Ahwaz. Nearly everyone is directly or indirectly connected with the production or refining of petroleum oil.

The Karun River is navigable from its mouth in the Shatt-el-Arab just below Mohammerah. The steamers now travelling along the Karun to Ahwaz operate to the disadvantage of the slower Arab *mahallas* (sailing barges). At Ahwaz a fine steel bridge, about an eighth of a mile in length, spans the Karun River and carries rail, motor and pedestrian traffic; and this bridge is regarded with the utmost pride by all who make their homes in Ahwaz.

North of this prosperous town the Trans-Iranian Railway passes Shush (the ancient Susa of the Elamites), where has been erected a substantial railway station. Presently it reaches the newly-created town of Salehbad; and this is close to the better-known town of Dizful, which is not actually served by the railway. Thus far, the railway has traversed flat plain or desert country. Thereafter, however, the line runs through rugged country; and the result was that, for a considerable distance, the track had to be hewn or blasted through the limestone mountains of Luristan until Burujird was gained.

Northward from Burujird, and as far as Teheran itself, the alignment presented less serious engineering difficulties than those encountered on the southern section. From Teheran, the capital city of Iran, the railway runs towards the Elburz Mountains and the summit of the Firuzkuh Pass; and it may be stated that the crossing of this wide range of mountains presented formidable engineering problems. The northern slope is very steep, and when travelling northward a drop of more than 6,000 ft. in altitude has to be negotiated.

Bandar Shah, the new port on the Caspian Sea, is situated about 14 miles to the northward of Bandar Gaz. It stands on the border of the Turkoman Steppe. Bandar Shah is approached through a flat country, uninteresting in general appearance and covered with dense scrub-growth. Yet the rise of this new Iranian port on the shores of the Caspian Sea has been a really remarkable achievement and its future appears to be promising.

The high road built by the Shah starts at the valley of the River Keredsh

Looking back from a vantage-point, one can see the many bends in the mountain road

The road follows a wild mountain stream, which threatens to wash away the soft rocks

The police-station on the "Shah's Road" which controls the traffic along the new highway

Between steep rocks and gulches, the road descends on the northward slopes of the Elburz

The "SHAH'S ROAD" in IRAN

The Wonderful Highway from Teheran to the Caspian Sea

SOME years ago Shah Reza Khan employed a Russian engineer who had gathered experience in the Caucasus regarding the construction of high mountain roads, and required him to design a motor-road leading over the Elburz. When this had been done the Shah personally supervised the speedy execution of the plan, and thus brought into existence in the remarkably short time of one year and a half, a first-class high mountain road.

One leaves Teheran going in a westerly direction, on the old road leading to Tabriz, where several other roads, leading to Russia, Turkey and Europe, branch off. After a 30-mile drive one reaches the Keredsh, a dark green, fair-sized river, the waters of which flow rapidly down from the spurs of the Elburz.

The "Shah's Road" follows the Keredsh in a northerly direction, and, as it climbs higher into the mountains, the slopes become barer and the rocks increasingly crumbly. Willow and poplar grow in the narrow valley as far as the humidity of the river reaches. Later, one passes a newly-built police-station where identification papers are controlled.

Then the valley becomes increasingly narrow and the bleak rocks of the mountains come down nearer the road. The formerly rather sedate River Keredsh has long changed into a rapid mountain stream over which the road—following the natural folds of the landscape—crosses and re-crosses repeatedly, sometimes over old provisionary wooden bridges, sometimes over newly- built bridges of reinforced concrete. In countless bends the road screws itself higher into the mountains, often offering beautiful views.

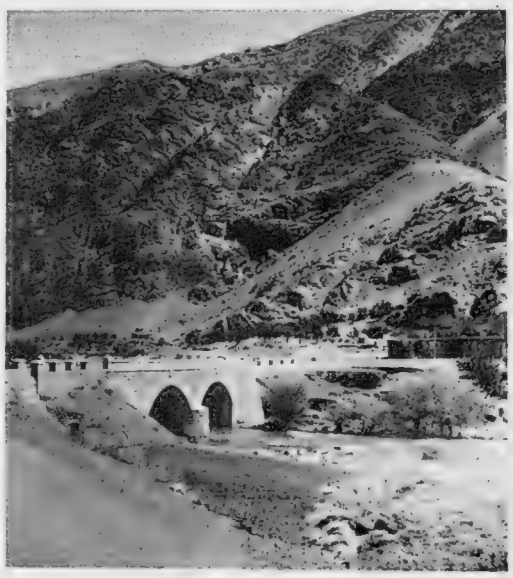
Below, in Teheran, and later in the valley of the Keredsh, the heat is very oppressive, but here, about 6,000 ft. above sea-level, it is already noticeably cooler. In ever new and daring hair-pin turns the road reaches the height of the pass. Embedded in the last side valley, the picturesque mountain village of Ghete-i-ser greets the traveller: the last green spot in the wilderness of bare rocks.

Fog hangs over the pass, which, at an altitude of more than 9,000 ft., surpasses the highest European motor-road, the Stilfser Joch, by more than 300 ft. At the head of the pass an Alpine hotel and a castle for the Shah have been constructed.

The descent is rapid, and whereas the climb is 6,000 ft. from Teheran, the descent is 9,000 ft. on the much steeper northern incline. Here the road had to be cut through the rocks. Following a wild mountain stream which constantly threatens to wash away the crumbling rock into which the road has been cut, the descent is somewhat exhilarating.

Though not many hours out of Teheran by this road, the fertile plains of Mazenderan are reached, and the last stretch of the road leads through well cultivated country, where cotton, tea and fruit are grown. One more iron bridge, on which a memorial tablet is fastened commemorating the construction of this new highway, and then the "Shah's Road" meets the old cross road, running along the southern shores of the Caspian Sea.

The last mountain village at 6,000 ft. above sea-level



A further erosion of the rock is checked by the construction of stone supports and bridges

The last stages of the "Shah's Road"—a broad highway, with modern bridges and banked corners

The fertile plains of Mazenderan are reached, and in the dark green a garden is seen—and the white hunting-lodge of the Shah

BARGES are NOW BEING MADE of CONCRETE

BARGES OF CONCRETE: An intricate weaving of steel and iron goes into the fabric of these vessels to make for greater strength

The sides of the barges are made from the pre-cast concrete slabs seen lying in the foreground. Behind is one of the partly-finished barges

In the last war considerable numbers of vessels were built of concrete; these ships were used on the high seas. Despite their utility at a moment when shipping of all kinds was necessary, they were not considered a great success—and they soon faded out after the Armistice. To-day, the experiment has not been continued—at least, for ocean-going craft. But barges, made of concrete and steel, are now proving a success on the waterways of Britain, and are helping in wartime transport problems. Steel and iron are both woven into the fabric of these vessels, and make for great strength of construction. Most of the men employed on this new-style shipbuilding were formerly builders: that their specialised knowledge should thus be applied in the shipbuilding yards of this country is just one further instance of the changes brought about by war!

How the decks are fitted to the solidly-constructed concrete craft: The wooden frames are to hold the liquid concrete and are removed later

A completed barge goes down the slipway: A picture which shows how the vessel appears, unladen, in the water. All the barges are of a good size

A line of barges, nearing completion, lying in dock: These craft have been fitted out, and they are now almost ready to go into service

THE SHIPBUILDER OF TO-DAY: These men are making good the seams on a concrete barge. Before the war the majority of them were employed ashore as builders: their skill and knowledge have now become valuable in the shipyards of Britain!

THE WOMEN WHO WORK: *Some of Those Who have Already Responded to the Great Call . . .*

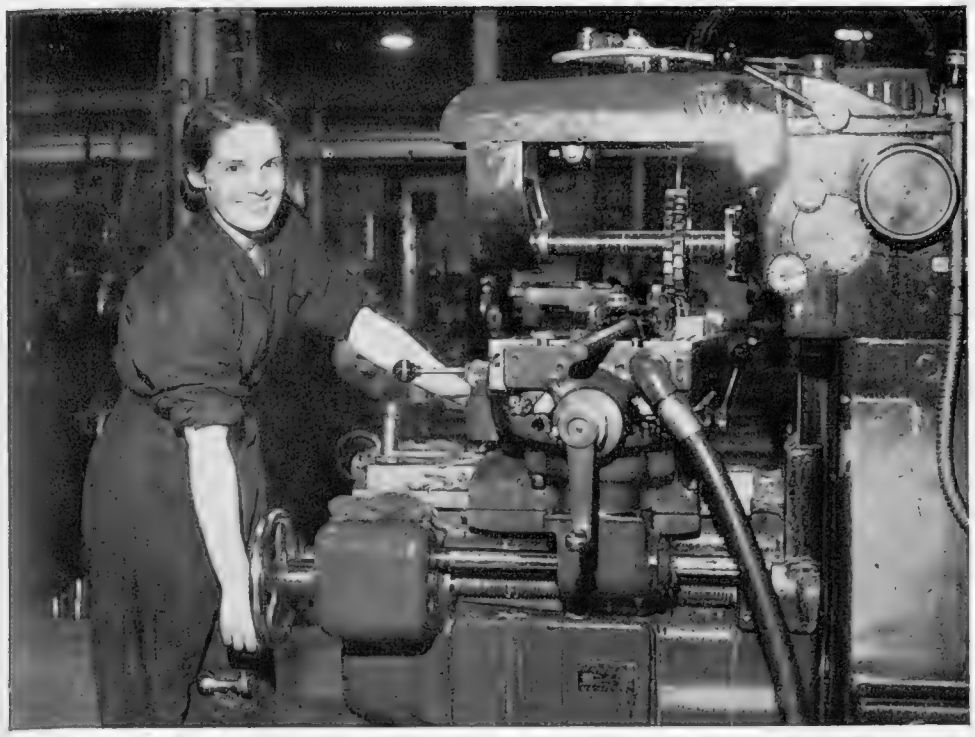
WORKING ON THE LAND—AND LUNCHING ON THE JOB! This load of hefty sandwiches is intended for a party of land girls to take with them to their work in the harvest fields near Pershore, in Worcestershire. The girls are quartered in an old Manor House and are not able to get back for a midday meal

MRS. DE HAVILLAND WORKS AT A BENCH IN AN AIRCRAFT FACTORY: Punching the time-clock every morning at eight o'clock in an aircraft factory which bears her husband's name, Mrs. Jessie de Havilland goes in overalls to her workshop bench for her day's contribution to victory. She is seen above (in centre) at her work bench; for the duration of the war she has abandoned her previous social life

HELPING TO SECURE THE COUNTRY'S FOOD SUPPLIES: A scene in a plum-canning factory at Evesham, in the Midlands, where the canning season is now in full swing. The Cannery is surrounded with orchards: a short time after the fruit has been picked it is sealed in cans, boiled and ready for distribution

AT WORK WITH THE ANTI-AIRCRAFT GUNNERS: These girls work with an Anti-Aircraft Co-operation Unit of the R.A.F. Their job is to record the gun-bursts during training of the anti-aircraft gunners. When at work the women wear battle-dress and parade with the men

THE MEMBERS OF THE W.A.A.F. WHO MANAGE ONE OF THE LONDON BALLOONS: A London balloon site was recently taken over entirely by members of the Women's Auxiliary Air Force. This was in the nature of an experiment which, if successful, may be extended to other sites. Here Air Marshal Sir Leslie Gossage is seen inspecting the women



A YOUNG WOMAN WHO HAS TAKEN OVER WARTIME DUTIES : Miss Norah Williams is twenty-three years of age. She worked in a paper factory in peacetime, but to-day she is engaged on the milling of breech mechanism components of two-pounder guns at a Government ordnance factory

THE WOMEN WHO MAKE THE GUNS : A young woman drilling the jacket and barrel of a gun at a British ordnance factory

ONE OF BRITAIN'S MUNITION GIRLS AT WORK : Miss R. Higginbotham is the eighteen-year-old daughter of an air-raid shelter builder. She operates a press for fuse detonators, and has to keep a careful watch on the special gauge above her head

RAILWAY HISTORY IN THE MAKING—A SCENE IN A DONCASTER SIGNAL-BOX : Standing at the signal levers is Mrs. Mary Millward, and logging trains is Mrs. Gladys Village. These two have made railway history by being put in charge of the signal-box at Warksworth

HEAVY WAR WORK CHEERFULLY UNDERTAKEN BY WOMEN : This is a new departure for women in wartime ! These girls are all members of the "Pick-and-Shovel Brigade," employed on the site of a new aerodrome in East Anglia, where some 100 women are doing the work of navvies. Above they are seen laying the pipes which help to drain the runway

A WOMAN SHOEMAKER OF THE W.A.A.F. : Another job which the women of the Air Force have added to their already long list of accomplishments is that of boot and shoe repairing. Some of the girls have already become masters of this trade !

The World of Books—By Vernon Fane

A JOURNEY THROUGH OPPRESSED EUROPE

A Brilliant Description of a Woman's Wartime Odyssey; Virginia in the Days of Slaves; Peter Cheyney's Tough Egg; Snakes and Nazis in Dutch Guiana

IN April 1940 Miss Polly Peabody landed at Bergen with an American field hospital on its way to Finland. Neither she nor the unit succeeded in getting there, for, within a day or two, German soldiers were leaping from the ships in which they were hiding in the fjord, and Quisling had already begun his dirty work.

How long ago it all seems! In **OCCUPIED TERRITORY** (The Cresset Press. 8s. 6d.) Miss Peabody explains how she came to join the hospital unit. "Finno-hysteria broke out in New York, like a violent rash on a baby's face." It is only sixteen months ago since the author of this lively, interesting, and at times moving record found it necessary to leg it across the frontier to Sweden, pursued by rumours of what the Nazis were doing to Norway.

She never got to Finland. The unit was dogged through Norway by the advancing Germans, and eventually made its way into Sweden, to find that its lighter moments, her story is a grim one. She reached London by way of a starving Spain and a feasting Portugal, and only in an epilogue does she venture to point a moral which should not be lost on her own countrymen. I cannot praise this book too highly. It is lively, even racy in places, and intensely readable. At the same time it is full of observation on peoples and on affairs and particularly on France, which are worthy of the most serious attention.

Readers of fiction with eclectic tastes will be interested to see no less a master than Miss Willa Cather at work upon an Uncle Tom's Cabin theme, **SAPPHIRA AND THE SLAVE GIRL** (Cassell. 7s. 6d.), which takes us back to Virginia in the last years of slavery.

When Sapphira Dodderidge married Henry Colbert it was plain that she was marrying beneath her. Included in her dowry were a number of Negro slaves, some of whom she sold to help her husband build the new mill house at Black Creek Valley. The people in that remote region were settlers from Pennsylvania who were opposed to slavery and who owned no slaves of their own. Sapphira, who had been brought up in the strong-willed, stiff-necked traditions of her own people, was at the same time not an unenlightened slave-owner. The personal relationship between owner and slave could be shown to reveal some of the best sides of the old Southern way of society. It could also reveal one of its worst manifestations in Sapphira's treatment of Nancy, the slave girl. Autocratic, domineering and ruthless where her own deep-set motives were involved, Sapphira plans the girl's ruin with calculated and malignant cruelty. Only at the last moment are her designs frustrated by her grave and patient husband and her daughter, Rachael, who take a hand in effecting Nancy's escape across the Potomac and to safety and freedom in Canada. There is an epilogue in which the whole story is put into clear focus through a personal touch by the author.

With supreme artistry, Miss Cather injects the full flavour of drama in subdued tones and with exquisite restraint. It is not a long book, but one which is worthy to stand with any other of this author's masterpieces.

From Miss Willa Cather to Mr. Peter Cheyney is a long hop. His technique is anything but subdued. His dialogue moves fast; more often furiously, and is uniquely embellished by a slang which never hit the air of any bar from the Chicago Loop to the Mile End Road.

Nevertheless, a new "Slim Callaghan" novel is always a welcome piece of reading, and **IT COULDN'T MATTER LESS** (Collins. 7s. 6d.) is well up to standard and therefore to be recommended.

Mr. Cheyney complains that some of the critics think that Slim Callaghan drinks too much, is too tough, and has too slick a way with women. To which Mr. Cheyney retorts, "Tell these critical gentlemen to go and fry an egg." If Mr. Cheyney would be good enough to supply the egg, I do not mind joining in the chorus.

Mr. Nicol Smith once wrote a book called *Burma Road*, which remains in my memory as one of the best travel books of its kind I have ever come across. **BUSH MASTER** (Gollancz. 10s.) is a worthy successor.

This time Mr. Nicol Smith is in Dutch Guiana, and in Paramaribo, the capital, he meets Herr Doktor von Heidenstamm, who calls himself "Bush Master" because of his passion for collecting snakes and because of his fondness for that particularly deadly variety. This queer character interests Mr. Smith in an expedition into the interior, telling him amazing tales of gold and radium deposits and of a race of three-fingered Indians.

The expedition proved to be as big a fake as the Bush Master himself, but by that time Mr. Smith had decided to push on and make some investigations on his own. Very soon he was again to cross the trail of the sinister Heidenstamm and to discover his true role as a Nazi agent organising a potential Fifth Column among a colony of escaped convicts who live in the jungle.

There is in this book plenty of action, adventure and rich description of strange men and women.

THE HOP-PICKING SEASON IN KENT: A view of the fine hop harvest on Mr. Noakes's Court Lodge Farm at East Farleigh, near Maidstone

country tense and mobilised. "As there was no longer any work for me, I resolved to leave the unit and try to make my way to France. . . . The only possible route left was via Moscow." She flew there via Riga, and thence made her way through the Balkans to Rumania. "For five days through the windows of my railway carriage I watched the Russian Army preparing for the occupation of Bessarabia. I saw division after division encamped on the wide plains of the Ukraine, whilst protecting planes constantly flew above them." In Bucharest she observed German "tourists" fluttering in from all sides in ever-increasing numbers. Thence by plane to Yugoslavia, where she "felt greatly heartened by the steadfastness and loyalty of this little nation." By plane again to Venice, to an Italy flown with insolence and synthetic victory. Hitler's jackal had just stabbed France in the back.

On to Geneva, "respectably nice and just as dull as Geneva ever was," and from there to France, to Clermont Ferrand, where it was rumoured that the seat of the French Government was. The pitiful armistice had just been signed.

So Miss Peabody had literally made a round trip from German-occupied Norway to German-occupied France. For practically the whole of the rest of the two-thirds of this book, not including the eventual continuance of the round trip from Paris to Lisbon and Lisbon to London, Miss Peabody describes her adventures and impressions in France. It is the France still reeling under the stunning blow. It is a France of bewildered humble people, of Fifth Columnists, Quislings, traitors and all sorts; of staunch but frustrated patriots, of the gerrymandering politicians of Vichy, swarming like evil flies round the ancient and decrepit figure of Marshal Pétain.

Undeterred by restrictions which were almost impossible to break through, Miss Peabody got by more than once into occupied territory and to Paris. Her description of this sullen city under the heel of the oppressor is one of the most interesting chapters in a remarkable book. At first hand she heard the story of what actually happened when the Germans arrived in Paris. She saw for herself all kinds of aspects of the occupation. While there she worked for British and French prisoners of war. Although it has

FROM LONDON TO THE KENTISH HOP-FIELDS: Hop-pickers are here *en route* for their annual "holiday with work"—a great annual occasion looked forward to by every member of the family. One family is seen travelling with all its possessions on a horse-drawn cart, while others make their way on foot with the luggage going by "pram"

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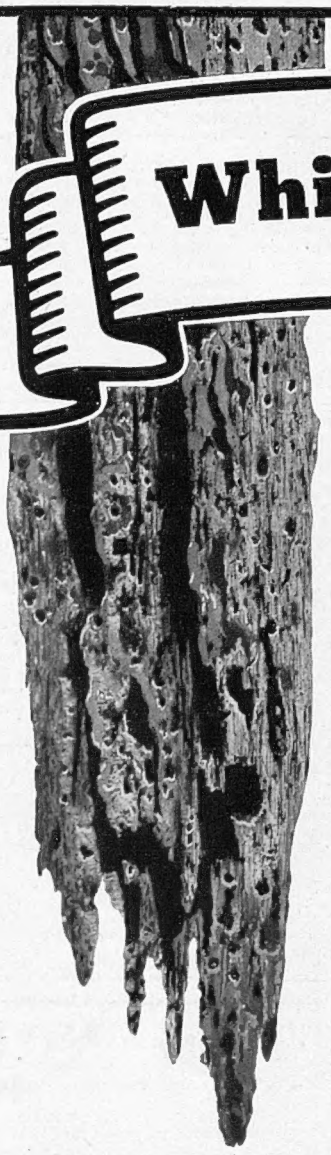

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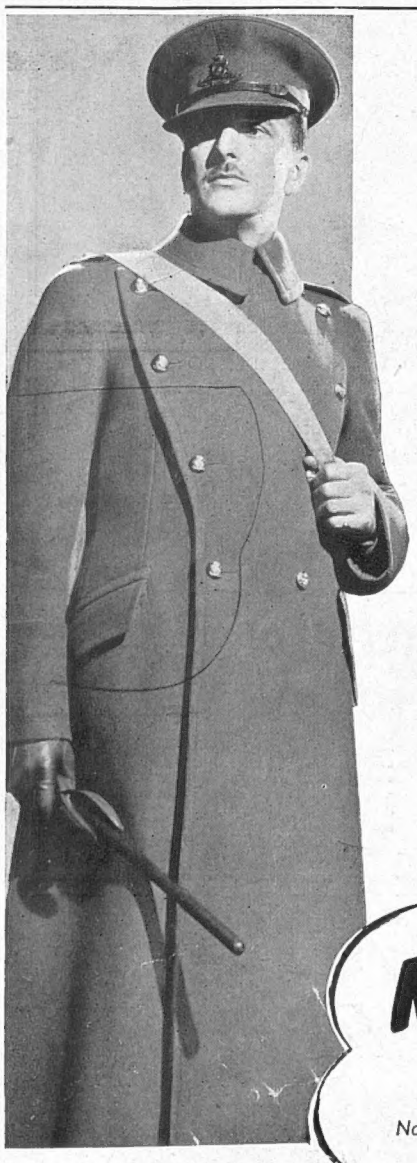

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IN QUEST OF GOOD HOTELS

BY ASHLEY COURTENAY

Owing to rationing of paper and the demand on our editorial pages, it is necessary to omit from time to time Mr. Ashley Courtenay's usual weekly feature. We would, however, emphasise that his services are still available for advising SPHERE *readers by post of hotels, both large and small, known to him personally. Letters, accompanied by a stamped, addressed envelope for reply, should be addressed to him c/o The Editor,* THE SPHERE, *Commonwealth House, 1, New Oxford Street, London, W.C.1. Personal and telephone inquiries, however, cannot be accepted. The undermentioned hotels are personally recommended by him*

CHURCH STRETTON, Shropshire. THE HOTEL. Like most good hotels these days this is mostly full, but the occasional vacancy in such a peaceful and picturesque district is worth waiting for. There are few hotels where homeliness is such a primary characteristic. Under the personal direction of Mr. W. Dennis Copeland and family.

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ON THE RAFT

WE are proud to belong to a race that produces such fine self-discipline, such unimaginable sacrifices of the strong to the weak as these men on the raft must show as they wait. But sometimes we forget to apply that lesson of self-sacrifice to our own lives today. Some even aggravate the problem by taking more than a fair share of what is available.

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